Minnesota State Medical Association, Annual Meeting, Duluth, June 29-30 and July 1, 1942

# MINNESOTA MEDICINE

*Journal of the Minnesota State Medical Association, Southern Minnesota Medical Association, Northern Minnesota Medical Association, Minnesota Academy of Medicine and Minneapolis Surgical Society*

PUBLISHED MONTHLY BY THE MINNESOTA STATE MEDICAL ASSOCIATION

**APRIL, 1942**

**Volume 25 — Number 4** **40 cents a copy — $3.00 a year**

## Contents

MEDICAL CAUSES OF REJECTION IN SELECTIVE SERVICE REGISTRANTS.
*C. A. McKinlay, M.D.*, Minneapolis, Minnesota.. 255

INJURIES OF THE NOSE.
*Carl W. Waldron, M.D., D.D.S.*, Minneapolis, Minnesota ..... 258

TRANSFUSION REACTIONS AND ERYTHROBLASTOSIS FOETALIS CAUSED BY THE RH FACTOR.
*George N. Aagaard*, M.D., Minneapolis, Minnesota 267

A SIMPLE METHOD FOR THE REMOVAL OF IODIZED OIL FROM THE SPINAL SUBARACHNOID SPACE.
*Edward H. Juers, M.D.*, Red Wing, and *Harold O. Peterson, M.D.*, Saint Paul, Minnesota..... 270

THE REMOVAL OF IODIZED OIL (LIPIODOL) FROM THE SPINAL CANAL AFTER ROENTGEN DIAGNOSIS.
*Gordon R. Kamman, M.D., F.A.C.P.*, and *John P. Medelman, M.D.*, Saint Paul, Minnesota..... 273

BOILED LIVER EXTRACT IN TREATMENT OF ACNE VULGARIS.
*C. A. Boreen, M.D.*, Minneapolis, Minnesota..... 276

CLINICAL PATHOLOGICAL CONFERENCE.
Presentation of a Case.
*Frank C. Andrus, M.D.*, Minneapolis, Minnesota 277

CASE REPORT:
Esophageal Perforation from a Stomach Tube.
*James M. Hayes, M.D.*, Minneapolis, Minnesota 280

HISTORY OF MEDICINE IN MINNESOTA:
History of the Minnesota State Medical Society.
*Arthur S. Hamilton, M.D.*, Minneapolis (*Continued*) ..... 281

PRESIDENT'S LETTER ..... 287

EDITORIAL:
The Doctors and the American Red Cross..... 288
Civilian Defense in Minnesota ..... 288
Prepayment Medical Plans..... 289
American College of Physicians Meets in Saint Paul ..... 290
Conference on Medical Service Plans..... 290

COMMUNICATION ..... 291

MEDICAL ECONOMICS:
Corrective Service to Selectees..... 292
Already at Work..... 292
Tax Measure or Social Planning?..... 293
The Council Meets ..... 294
Minnesota State Board of Medical Examiners.. 295
Physicians Licensed February 13, 1942..... 296

INDUSTRIAL HEALTH:
Conservation of Man Power..... 297

PROCEEDINGS OF THE MINNESOTA ACADEMY OF MEDICINE:
Meeting of February 11, 1942..... 298
Malignant Exophthalmos Following Thyroidectomy in Graves' Disease.
*Walter E. Camp, M.D.*, Minneapolis..... 298
The Importance of the Pituitary Gland in Diabetes Mellitus.
*A. E. Cardle, M.D.*, Minneapolis ..... 301

REPORTS AND ANNOUNCEMENTS ..... 307

IN MEMORIAM ..... 309

WOMAN'S AUXILIARY ..... 311

OF GENERAL INTEREST..... 312

BOOK REVIEWS ..... 317

Contents of MINNESOTA MEDICINE copyrighted by Minnesota State Medical Association, 1942

Entered at the Post Office in Minneapolis as second class mail matter. Accepted for mailing at the special rate of postage provided for in Section 1103, Act of October 3, 1917, authorized July 13, 1918.

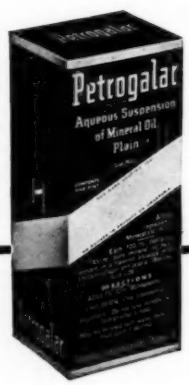
**Printed in U. S. A.**

## LET'S GO! DOUBLE TIME

• The Army's carefully planned routine soon enables the rookie to put in a full day at "double time" without ill effects. But for the civilian "double time" living often results in faulty health habits which you as a physician are called upon to correct.

When constipation exists consider the advantages of Petrogalar* as an aid in the restoration of normal bowel movement. Its pleasant taste and gentle, consistent action are acceptable to even the "fussiest" patients.

Petrogalar is available in five different types to afford a choice of medication best suited to the individual patient.




FOR THE TREATMENT OF CONSTIPATION

# Petrogalar

*Reg. U. S. Pat. Off. Petrogalar is an aqueous suspension of pure mineral oil each 100 cc. of which contains 65 cc. pure mineral oil suspended in an aqueous jelly containing agar and acacia.

Petrogalar Laboratories, Inc. • 8134 McCormick Boulevard • Chicago, Illinois

# MINNESOTA MEDICINE

*Journal of the Minnesota State Medical Association, Southern Minnesota Medical Association, Northern Minnesota Medical Association, Minnesota Academy of Medicine and Minneapolis Surgical Society*

Volume 25 April, 1942 No. 4


## MEDICAL CAUSES OF REJECTION IN SELECTIVE SERVICE REGISTRANTS


C. A. McKINLAY, M.D.
Minneapolis, Minnesota


THE nature of physical causes of rejection for military service has important implications not only from the viewpoint of the state of preparedness of the nation but also from that of disease tendencies in relation to the practice of medicine and to preventive medicine. Considerable discussion has taken place with regard to causes of physical disability in registrants, sometimes with emphasis upon supposed inadequacy of medical care.

It is with considerable interest that analysis has been made of the records of registrants examined by the writer as a member of the Medical Advisory Board of Hennepin, Sherburne, Scott, Wright and Carver counties, District I, comprising urban as well as rural communities. This represents only a small sample with limited value compared to total summaries. Of 209 men consecutively examined who were recommended for rejection or placement in limited service classification it is to be noted that the conditions responsible fell within the field of internal medicine and, therefore, that visual, dental, orthopedic defects and hernia which predominate as total causes of rejection are not included herein. Each individual had received his initial examination by a practicing physician who had volunteered to give this service in his office according to the intent of the selective service regulations. Special laboratory examinations including electrocardiograph and determination of the basal metabolic rate and sugar tolerance have been done only when indicated.

It is seen (Table I) that disorders of the cardiovascular system lead as a cause of rejection and, of these, hypertension and neurocirculatory asthenia are most common. Sustained elevation of blood pressure of 150 mms. of Hg systolic or 90 diastolic on two or more observations was the criterion. Attempt was made to reduce to a minimum by rest periods the immediate exciting factor of physical examination, an unusual event for a majority of these individuals. No renal or other somatic causes were demonstrated in the hypertensive group. It appears that the present group, compared to those of effort syndrome described by Lewis[6] in 1920, have a greater tendency to hypertension either with or without tachycardia.

TABLE I

| | Number of cases | Per cent of total |
|---|---|---|
| Total number rejected | 209 | |
| Causes of rejection: | | |
| *Total cardiovascular* | 132 | 63.1 |
| Neurocirculatory asthenia | 55 | 26.3 |
| Hypertension without tachycardia | 32 | 15.3 |
| Hypertension with tachycardia | 23 | 11.0 |
| Organic heart disease | 22 | 10.5 |

Lewis[6] emphasized poor reaction to exercise with retarded return of pulse rate to normal; also pulse rates at rest often between 80 or 90 were described sometimes with elevation of systolic blood pressure. Cases with vagosympathetic imbalance or neurocirculatory asthenia, when marked in degree, were rejected according to established standards. Persistent sinus tachycardia was one criterion used in this group although in others evidences of vasomotor instability were difficult to evaluate.

In the group reported upon, the response of the heart rate to a given amount of exercise has not provided critical information because no constancy of physical effort or nervous factors

Presented before the Minnesota Society of Internal Medicine, October 25, 1941.

obtain in exercise tests available under the circumstances of these examinations. While such tests may give a rough estimate as to physical fitness, little of value was obtained in regard to cardiac diseases that was not apparent from other sources. As Smith[8] mentions, the response of an individual with chronic valvular heart disease to exercise tolerance tests may be good whereas that of a normal individual who has led a sedentary life is poor. Often the problem has first centered around elimination of the immediate exciting factor of the examination. Individuals with tachycardia, that is, 100 or over, and hypertension have had a period of recumbent rest for twenty to thirty minutes. This represents the standard basal rest period with reduction of nervous and emotional factors. Observations of pulse rate and blood pressure when these were elevated were made frequently on another day. Cases with persistant tachycardia, over 100, under these circumstances of complete rest have added significance and were considered cause for rejection.

TABLE II

| | Number of cases | Per cent of total |
|---|---|---|
| *Organic heart disease* | 22 | 10.5 |
| Chronic valvular disease | 15 | 7.1 |
| Congenital defects | 2 | |
| Cardiac hypertrophy | 2 | |
| Myocarditis | 1 | |
| Paroxysmal auricular flutter | 1 | |
| Paroxysmal auricular tachycardia | 1 | |
| *Gastro-intestinal disease* | 39 | 18.6 |
| Duodenal ulcer | 36 | 17.2 |
| Severe functional disturbances | 2 | |
| Ulcerative colitis | 1 | |

Organic heart disease caused 10.5 per cent of rejections with chronic valvular disease its most common manifestation. In certain instances, particularly the arrhythmias, electrocardiographic study was done at the time of the examination or previous records, obtained through the courtesy of the registrants' physicians, were interpreted and established one instance of paroxysmal auricular flutter and another of paroxysmal auricular tachycardia. In others absence of important findings were noted.

The most common somatic disease found with demonstrable lesion was duodenal ulcer occurring in 17.2 per cent (Table II). The diagnosis was established after study by the roentgenologist in thirty-three cases and was suggested by the clinical history in 73 per cent of cases and was consistent with symptoms in the remainder. The duration of symptoms varied from six months to twelve years. The comparative frequency of duodenal ulcer found is in keeping with the recent experience in the British forces of similar age group reported by Payne and Newman.[7] They found that 14 per cent of evacuated cases had peptic ulcer. Of a sample of 287 gastro-intestinal cases 89 per cent had gross disease, almost all ulcers, the majority of which were duodenal. In 92 per cent of the individuals they were present before the war. These observers considered that the most important factor leading to symptoms is in the change from a relatively strict diet to army food. *The Lancet*[8] stated editorially that from several points of view peptic ulcer was the most important medical problem of the current war.

TABLE III

| | Number of cases | Per cent of total |
|---|---|---|
| Other causes of rejection or limitation of service | 35 | 16.7 |
| Hyperthyroidism | 16 | 7.6 |
| Asthma and hay fever | 5 | |
| Nephritis and nephrosis | 4 | |
| Diabetes mellitus | 3 | |
| Diabetes insipidus | 1 | |
| Osteomyelitis | 1 | |
| Below minimum height | 1 | |
| Alcoholism with neuritis | 1 | |
| Hyperinsulinism | 1 | |
| Renal calculus | 1 | |
| Pulmonary tuberculosis | 1 | |

The diagnosis of hyperthyroidism was made in 7.6 per cent and established by the clinical picture and increased basal metabolic rate. Asthma and hay fever, nephritis and diabetes mellitus were less frequent causes of rejection or of limitation of service (Table III). A report of causes of rejection throughout the state, furnished through the courtesy of Colonel R. B. Hullsiek,[5] Medical Officer State Selective Service Headquarters, contains total figures only for cardiovascular and gastro-intestinal causes whose ratio was approximately seven to one. This compares with that of three to one herein reported of total number of cardiovascular causes compared to duodenal ulcer. This variation may be explained in part by greater facilities for gastro-intestinal roentgen ray examination available in this district.

The infrequency of infectious diseases including pulmonary tuberculosis raises the question of the adequacy of the means available for case

detection. Undoubtedly the ideal method would include a roentgen film of each registrant as a part of the initial examination as is done in certain areas. In the cases herein reported whenever history or physical signs have suggested possible pulmonary disease a film of the chest has been made (71 cases). In one instance were shadows suggestive of fibroid pulmonary tuberculosis found by the roentgenologist; in another bronchopneumonia was found which cleared within a few weeks. It would appear that the possible chance of oversight of pulmonary tuberculosis in this group has not been great.

It is seen upon analysis that preventable communicable disease was rare in this group. Chronic valvular disease, the chief organic disease found other than duodenal ulcer, is not at this time a preventable disease. The emphasis placed upon nervous and emotional as well as nutritional factors as related to the origin and behavior of duodenal ulcer hardly places it at the door of medical neglect. Hofmeyr[4] has called attention to the rarity of peptic ulcer in the primitive South African and quotes Eagle and Gilman, who on the basis of combined statistical studies of necropsy material concluded that the average European was seven times more susceptible to peptic ulcer than the Bantu. Poor dietary habits indicative of nutritional deficiency sometimes present before onset of duodenal ulcer likewise have often economic and social rather than medical bearing. Hypertension likewise is relatively uncommon in the Orient according to common reports from physicians who have practiced there. If in addition to hypertension and neurocirculatory asthenia, duodenal ulcer is added to the general category of disease in which nervous and emotional factors are important in pathogenesis or course, it is seen that approximately 70 per cent of all rejections are included therein. It is interesting to note that Paul D. White[9] discussing the 1938 report of the Surgeon General noted that neurocirculatory asthenia has been taken from the heading of circulatory disease and placed under diseases of the nervous system. Boynton and Diehl[1] in a survey of university students subject to registration for the Selective Service noted that the large majority who were given restricted classifications because of physical defects had defects which were not correctible so far as army service was concerned.

Cannon[2] has emphasized the effects of the emotions on bodily functions and believes that the medical profession has not appreciated the influence of the nervous and emotional strain as a cause of disease and has not realized in a practical way the recent shift from the infections in the etiology of disease.

While realizing that any generalization with regard to diseases of unknown origin such as non-renal hypertension, neurocirculatory asthenia and duodenal ulcer is valueless, it is of interest that as leading causes of rejection they are characteristic of American and European civilization rather than that of peoples of more primitive living habits. The causes of rejection herein reported in no sense represent failure of the practice of medicine or of preventive medicine.

## Summary

1. Essential hypertension (26.3 per cent) and neurocirculatory asthenia (26.3 per cent) were the chief causes of recommendation for rejection among 209 registrants disqualified or qualified for limited military service only. Preventable infectious diseases were rarely found.

2. The chief somatic disease found with demonstrable lesion was duodenal ulcer (17.2 per cent) followed in frequency by organic heart disease (10.5 per cent) and hyperthyroidism (7.6 per cent).

## Bibliography

1. Boynton, R. E., and Diehl, H. S.: The rehabilitation of registrants. Jour. A.M.A., 117:623-625, (Aug. 23) 1941.
2. Cannon, W. B.: The role of the emotions in disease. Ann. Int. Med., 9:1453, 1936.
3. Editorial: Dyspeptics in the army. The Lancet, p. 6124, (Jan. 11) 1941.
4. Hofmeyr, H. O.: History of vitamin C deficiency in the South African native. Proc. Staff Meetings of the Mayo Clinic, 16:644, (Oct. 8) 1941.
5. Hullsiek, Lt. Colonel R. B.: Personal communication.
6. Lewis, Thomas: The Soldier's Heart and the Effort Syndrome. New York: Paul H. Hober, 1920.
7. Payne, R. T., and Newman, C.: Interim report on dyspepsia in the army. Brit. Med. Jour., 2:1940, (Dec. 4) 1940.
8. Smith, F. M.: Examination of the heart for military service. Jour. A.M.A., 117:329-332, (Aug. 2) 1941.
9. White, P. D.: The soldiers and his heart. War Med., 1:158, (March) 1941.

# INJURIES OF THE NOSE

CARL W. WALDRON, M.D., D.D.S.

Minneapolis, Minnesota

WOUNDS of the nose result from a great many forms of trauma and may present variations in the types of injury or loss of the skin and supporting bony and cartilagenous structures. Contusion and laceration may be very marked or slight, and the wound may be at right angles to the skin or oblique and undermined, exposing an extensive portion of the underlying tissues. Nasal injuries are frequently associated with fractures of the upper jaw, the malar bone, head injuries, or with other serious injuries that may receive active treatment before the wounds of the nose may be taken care of in a thoroughly efficient manner.

The immediate treatment should be directed towards the prevention and control of shock and hemorrhage if present. Bleeding into the throat with consequent respiratory obstruction in a severely depressed or partially conscious patient may be very serious and later pulmonary complications may ensue from the inspiration of blood, mucus, or foreign bodies into the lungs. Partially separated flap-like portions of the nose should be replaced and gently supported by gauze dressings to avoid undue pressure and possible interference with the blood supply of a nearly detached portion of the ala or tip of the nose.

The wounds should be cleansed of blood clots and debris, or any foreign bodies that may be present. For this purpose, soap and water and hydrogen peroxide have been found most useful. The wound margins should be retracted with fine skin hooks and all foreign bodies should be carefully removed in order to promote healing. Lacerated and contused skin margins may require conservative débridement, and the sharp excision of ragged edges will facilitate suturing and diminish the amount of scarring of the skin that will subsequently occur. Portions of contused skin may be found almost completely detached, necessitating excision to prevent loss of the affected skin from sloughing. Lacerated wounds of the nose, if extensive, may permit adequate inspection of the fractures of the underlying bony structures. The parts may then be reduced under visual control. One must resist the temptation to remove partially separated fragments of bone and cartilage, for in practically every case they may be retained to aid in the healing and stabilization of the supporting structures. Those small pieces of bone sequestrate so rarely that their retention should be the rule.

The suturing of wounds of the nose should be undertaken with a due sense of responsibility regarding the ultimate scar and the contour of the external nose. Far too frequently, one sees such wounds closed with interrupted sutures of stiff dermal or even silk worm gut, using needles many times too large. If a surgeon finds it inconvenient to use the finest of suture material, such as Deknatel A threaded on arterial needles, he should keep on hand tubes of plastic sutures threaded on fine eyeless needles, or refer the patient to a surgeon who will close the lacerations in a proper manner. Careful subcuticular suturing is being used more and more by plastic surgeons because the sutures may be left in for ten days to two weeks in order to maintain the close approximation of the skin margins. Interrupted sutures of Deknatel A may then be used sparingly where needed for fine approximation, and removed in two or three days without producing stitch marks. A slightly heavier suture, Deknatel B, or fine horse hair suture is excellent for the subcuticular suturing. When the wound is of any considerable length, it is best to bring the suture out through the skin at intervals of three-fourths of an inch, and then reinsert the needle to continue the subcuticular closure. This facilitates the removal of the suture because it may be divided where it is exposed through the skin, and removed in short lengths. Care should be taken to secure all bleeding points that continue to ooze after clamping, by ligation with very fine catgut or silk, because a hematoma may seriously interfere with the healing of the parts. In undermined wounds with a number of fine bleeding points, ample drainage is essential. This may be secured by using a small strip cut from a Penrose drain or a strip of cellophane, to be removed in one or two days. A small vaseline strip of fine mesh gauze is then placed over the

wound, over which a pressure dressing is applied. Badly contaminated wounds should be insufflated with powdered sulfanilamide before suturing.

Actual loss of nasal skin should be restored by immediate skin grafting unless the wound is so obviously contaminated that efficient cleansing is unlikely to be successful, or where a surface of bone is exposed that cannot be covered by suturing the subcutaneous tissues. Full thickness grafts from the postauricular region are the most satisfactory from the standpoint of color and texture. They should be sutured in position under slight tension and maintained under moderate pressure by means of a dental wax or compound splint or a metal splint. When the graft is situated laterally at the base of the nasal bridge, efficient stabilization and pressure may be secured by leaving the marginal fixation sutures long and tying them over wax or a dental cotton roll. The dressings should be left undisturbed for a week or ten days unless the need for more efficient stabilization or pressure seems indicated. There can be no doubt that cosmetic results would be better if immediate skin grafts were employed more frequently in cases of traumatic loss of the nasal skin.

## Fractures of the Nasal Bones

These fractures are probably the most commonly seen in practice, and it is to be regretted that all too frequently they do not receive the attention they deserve. This is due to a rather general disposition to consider nasal fractures and resultant cosmetic deformities as matters of minor importance together with the fact that the initial swelling of the adjacent soft tissues may disguise the presence of underlying fractures with displacement. The great advances in rhinoplastic surgery of the past decade have given surgeons a better understanding of underlying displacements and reasons for the deformities of the nose that result from the various types of nasal injuries. Consequently, many of the disfigurements that heretofore have been considered unavoidable are now known to be definitely amenable to treatment. One must guard against the temptation to neglect the fractured nose in children. Swelling, tenderness and the usual difficulties encountered in examining and treating children may make the diagnosis of fractures and displacements of the nasal bones and cartilaginous septum a matter of considerable difficulty. It is a fact that both children and adults are much more appearance-conscious than formerly was the case and that noticeable nasal deformities assume considerable psychologic and economic importance in this competitive age.

### Classification of Fractures of the Nose

(Modified from Safian and Tamerin)

I. Simple Fractures
  A. Fractures of the nasal bones and frontal processes of the maxillae.
    1. Linear fractures without displacement.
    2. Fractures with displacement and deformity.
      a. Medial depression of one nasal bone and frontal process.
      b. Lateral deviation, due to medial depression of one nasal bone and frontal process with lateral displacements of the bridge and the opposite nasal bone and process; also displacement of the nasal septum.
      c. Depression of the bony bridge.
      d. Widening of the bony bridge and bases of the nasal bones and frontal processes of the maxillae.
  B. Fractures of the nasal septum.
    1. Without deformity.
    2. With displacement and deformity.
      a. Depression of the septum.
        (1) Saddle nose.
        (2) Dropped tip.
        (3) Obstruction of respiration.
      b. Deviation of the septum.
        (1) Without external deformity.
        (2) With external deformity.
          (a) Protruding septum.
          (b) Deviation of alar cartilages.
  C. Combined fractures of the nasal bones and the septum.

II. Compound Fractures—including Complicated Fractures.

### Signs and Symptoms

*Hemorrhage* from the nasal cavities is present in most fractures of the nose. It may be slight in amount and cease spontaneously or may be profuse and continue to exsanguinate the patient unless promptly controlled and arrested. Bleeding may be from one side only if but one nasal bone is fractured and depressed. The bleeding is due to the rupture of the nasal mucous membranes by the bony fragments.

*Ecchymosis and swelling* result from the extravasation of blood into the subcutaneous tissues. This may be unilateral or bilateral and varies considerably in amount and position. The eyelids may be involved to a marked degree, and the extravasation may extend to the cheeks or

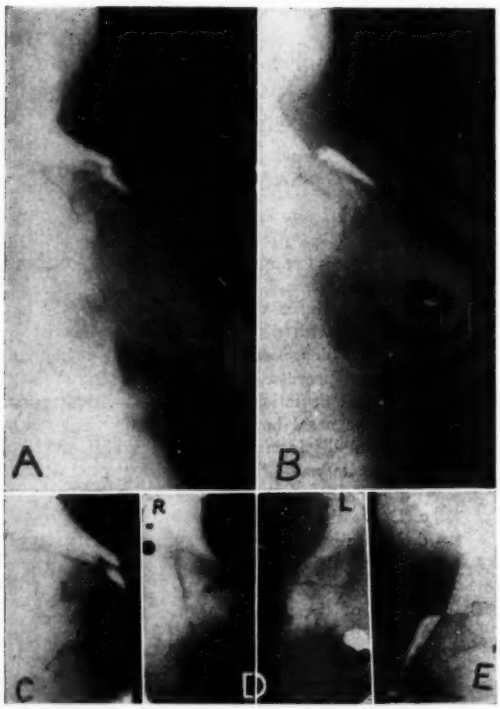



Fig. 1. Roentgenograms showing fractures of the nasal bones.

even to the neck. Ecchymosis and swelling usually appear soon after the injury, but it may be almost twenty-four hours before these symptoms become manifest. They may increase for another day or two and then subside to disappear in about ten days' time.

*Nasal obstruction* is a frequent symptom and may be due to a combination of blood accumulation, swelling of the nasal mucosa and a fracture displacement of the nasal septum. Subperichondreal elevation of the septal lining mucosa from the cartilage by hemorrhage may produce an obstructive hematoma. This should be looked for to permit surgical evacuation of the blood in order to avoid subsequent infection and abscess formation which, in turn, might be followed by destruction of the septal cartilage with the dropping of the cartilagenous bridge to produce a saddle nose.

*Pain* is rarely severe, and manipulation of the nose may elicit but moderate tenderness. Bony crepitus is usually felt when the fractured parts are manipulated or repositioned by the fingers.

*Deformity* may not be noticeable unless the nasal bridge has been displaced from its midline position or has been depressed. One may readily overlook lesser deformities because they are frequently masked by swelling of the soft tissues.

### Diagnosis of Fracture of the Nose

One must suspect fractures with minor displacements in all cases of injury to the nose until swelling, discoloration, and tenderness of the overlying soft parts and of the eyelids have been proved to be due only to contusion and not to an associated bony injury. Impaired nasal breathing space and bleeding from the nose usually indicate fractures and careful intranasal examination should be made in every case. This often gives one valuable information regarding fracture displacements of the bony and cartilagenous septum as well as displacements of the nasal bones. X-ray examination (Fig. 1) is usually more a matter of confirmation of the clinical diagnosis than a necessity in the handling of these cases. A carefully exposed lateral X-ray film may, however, be of decided value in the diagnosing of a depressed fracture of the lower portion of the bony bridge which might otherwise be completely masked by swelling (Fig. 1A).

### Anatomic Pathologic Considerations

The arch of the bony bridge is composed of the two (paired) nasal bones and the frontal processes of the superior maxillae supported in part by the bony and cartilagenous septum (Fig. 2). Below the nasal bones, the bridge is composed of the anterior margins of the two lateral or triangular cartilages supported by the septal cartilage which projects between them to a variable degree. The lower portion of the nasal bridge is composed of the upper margin of the septal cartilage alongside of which approximate the upper inner borders of the alar cartilages. In combined fractures the component parts of the nasal septum, the vomer, quadrilateral cartilage and the perpendicular plate of the ethmoid are involved and displaced by fracturing or by fracture dislocations. Any of the component bony and cartilagenous parts of the nose may be involved in fractures with resulting displacements, hemorrhage and swelling.

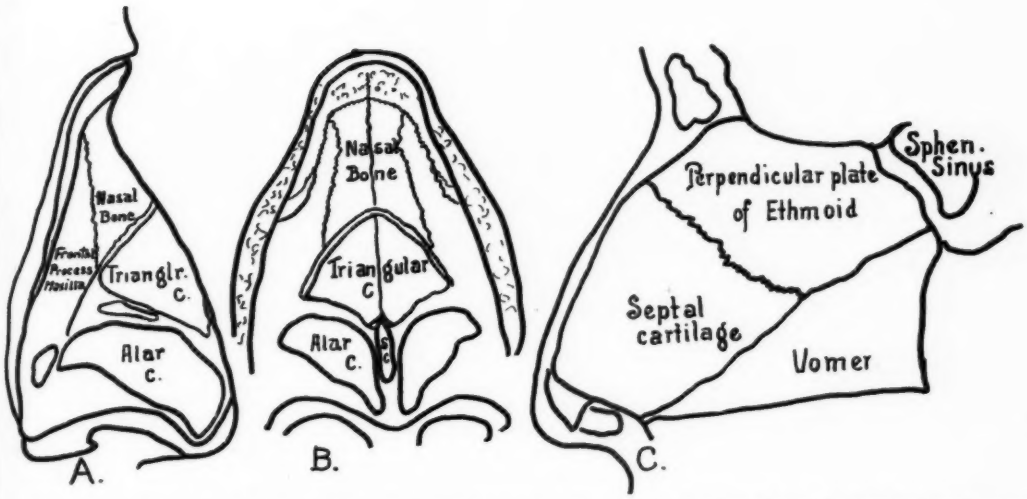



Fig. 2. *A.* Lateral view of the bony and cartilagenous structures of the nose. *B.* Anterior view of the bony and cartilagenous structures of the nose. *C.* Nasal septum.

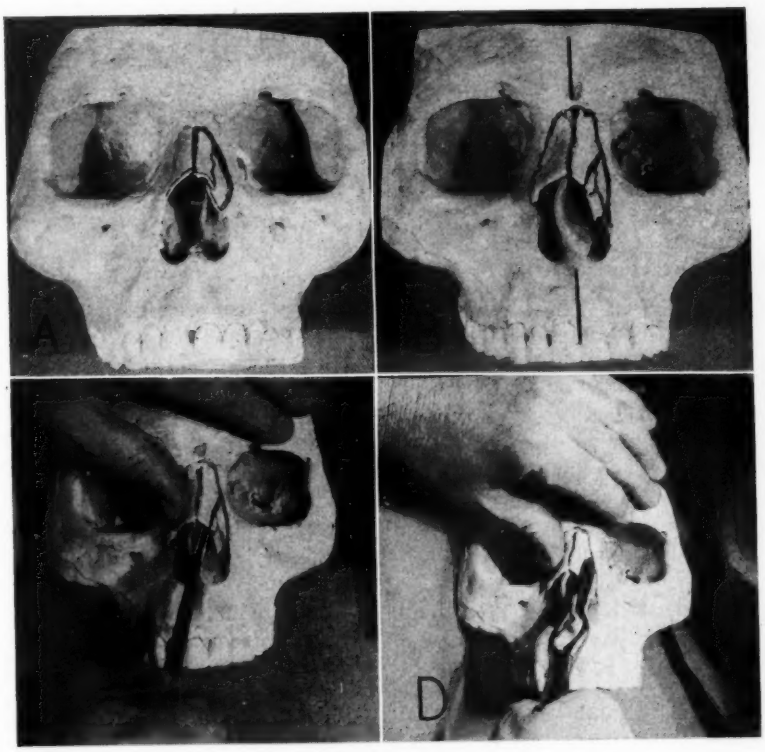



Fig. 3. *A.* Unilateral depression of the nasal bones. *B.* Fracture of both nasal bones with lateral deviation. *C.* Correction of medially displaced nasal bones by means of an elevator. External displacement of the right side corrected by pressure with the thumb. *D.* The Asch, duck-billed forceps used for the elevation of the depressed nasal bone.

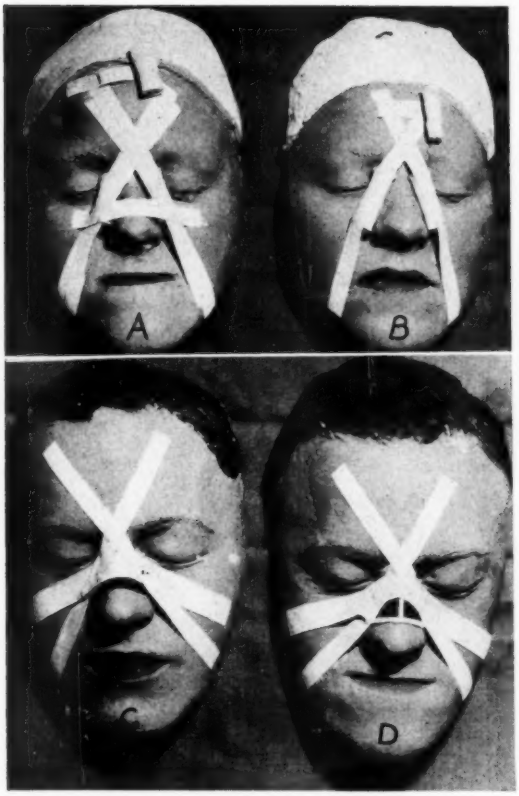



Fig. 4. Methods used to hold the nasal bones in position. *A.* Cotton rolls. *B.* Bandage rolls. *C.* Dental compound splint. *D.* Metal splint (brass or aluminum).

### Treatment of Fractures of the Nose

Hemorrhage must be controlled by local means, such as intranasal tampons or packing applied for a few minutes or left in position for twenty-four hours if necessary. External pressure by a molded splint may be of service in the control of bleeding and the prevention of a hematoma. In most cases, however, bleeding either stops spontaneously in a few minutes or after nasal packing which may be removed in a short time. One must watch for the presence of a hematoma of the external tissues or of the septum in order to evacuate the blood surgically by external or intranasal incisions.

Swelling and ecchymosis cannot be effectively controlled and usually runs its course. Cold compresses may reduce the swelling to some degree.

Pain may be absent, and if of any consequence, may be controlled by aspirin, codeine, and other sedatives. Blood clots may be removed from the nasal cavity by the usual methods. The patient should not blow his nose as air might be blown through lacerations to produce an emphysema of the nose or cheek. This might become infected and at best might persist for several weeks.

Primary treatment of fractures of the nose may be undertaken within the first two or three weeks after the injury, i.e., before more or less complete fibrous immobilization of the fragments has taken place. If this period has elapsed, it is well to postpone rhinoplastic procedures for the correction of deformities for several months. By this time, complete healing and circulatory adjustments of the parts will have taken place, and the tissues will react more kindly to the rather severe surgical procedures made necessary for the correction of the displacements and deformity.

Simple linear fractures without deformity usually do not require any active treatment unless a hematoma is present. One must differentiate between an extensive swelling, which may be reduced by gradually applied pressure, and a hematoma, which produces a moderately firm enlargement that cannot be reduced to any extent by externally applied pressure. Such collections of blood and blood clot should be evacuated and pressure applied in order to prevent possible organization of the clot and permanent enlargement of the area.

*Unilateral medial depression* (Fig. 3) of the nasal bridge is usually due to an impact with a small object. The lines of fracture tend to be multiple and involve both the frontal process of the maxilla and the nasal bone proper. Initial swelling may completely mask this type of fracture though unilateral nasal obstruction and a sense of pressure in the upper portion of the nose on the affected side will usually bring the patient to the physician for treatment. Palpation and manipulation will determine the position of the depressed fragment and whether there also is a slight lowering of the dorsum of the bridge. A small dental x-ray film placed against the side of the nose with minimal exposure often gives valuable information regarding fractures of the lower end of the dorsum of the nasal bones with slight depression. In the event that this type of nasal fracture is not diagnosed during the period of swelling, the driven-in appearance becomes apparent when the swelling subsides after a few days, and there is still ample time for successful

elevation of the depressed fragments. Treatment is relatively simple. The nasal mucosa adjacent to the depressed fragments may be anesthetized by the application of 10 or 20 per cent cocaine solution, using cotton on fine metal applicators. A slightly curved blunt elevator is then inserted high up in the nose between the septum and the depressed fragments. These are elevated and repositioned, aided by manipulation with the fingers on the external surface of the bridge. Slight overcorrection of the deformity is indicated. The fragments may be held in position by the insertion of a small high pack of one-half inch iodoform gauze well lubricated with an anesthetic antiseptic ointment. This should be changed every day until the fragments become sufficiently stabilized to maintain their proper position without danger of recurrence of the deformity. An external splint made of brass or aluminum lined with outing flannel or moleskin adhesive (Fig. 4) may be useful in maintaining the alignment of the nose and protecting it from minor pressures or traumatisms.

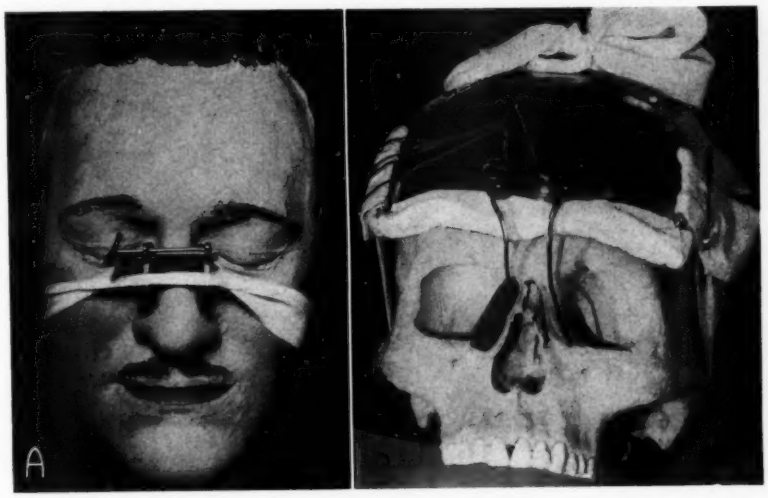



Fig. 5. *A.* Adjustable Joseph splint used to maintain the medial position of the nasal bones. *B.* Frontal appliance used to maintain the medial position of the right nasal bone.

*Lateral deviations of the bridge* (Fig. 5) are the result of severe blows on the side of the nose which produce fractures of the frontal processes of both sides of the maxilla with transverse fractures of the upper portion of the bridge. The underlying bony and cartilagenous septal support is fractured and carried laterally with the movement of the bony bridge. The resulting deformity is a flattening and depression on the side receiving the blow, with displacement of the dorsum of the bridge to the opposite side. The diagnosis of this type of fracture is usually made without difficulty for the lateral deviation is quite noticeable although extreme swelling may occasionally disguise the fact that the nasal bones are displaced considerably from the median plane.

Repositioning of the displaced fragments may be secured by pressure of the thumb on the convex side. This may be supplemented by the elevation of the depressed side by using a blunt elevator within the nasal cavity. Though one may secure reduction of the displacement at times without anesthesia, it is better to inject novocaine along the lateral borders of the nose and apply cocaine and adrenalin to the nasal septum and the external nasal walls adjacent to the frontal processes of the maxilla. This facilitates more accurate replacement of the fragments and permits careful and firm manipulation unhampered by tenderness of the injured parts. The associated fracturing or buckling of the nasal septum may at times interfere with the repositioning of the nasal bones. In such cases, realignment of the nasal septum may be accomplished by means of a duckbilled Asch forceps (Fig. 6). There may be a tendency for the septum to spring back to-

wards its former displaced position. If so, intranasal splinting or packing should be maintained on this one side (and changed daily) until the septum will remain in the median position. Slight over-correction of both the septal displacement and the external deformity is indicated in these cases of fracture deviations of the bridge, and the corrected position should be maintained by the use of some form of external support. Dental cotton rolls or bandage rolls, held against the side of the nose by adhesive tape (Fig. 7), may be used. It is difficult, however, to hold these rolls in position and maintain uniform support without undue pressure. Therefore, in most cases, some form of rigid splint should be employed. Dental impression compound may be slightly softened in hot water and moulded over the repositioned nose. This compound hardens quickly and may be trimmed and reapplied with adhesive tape. Splints may be made of soft metals such as tin, copper, or alloys or of stiffer metals such as aluminum or brass. All of these splints should be lined with outing flannel held by mastisol or by moleskin adhesive. If greater lateral compression is needed, one may apply the Joseph or Safian nasal brace (Fig. 8). If there is need for extra pressure on but one side, this may be secured by various types of head bands with adjustable extension arms from frontal plates (Fig. 9). The pressure may be applied by spring action or by the use of rubber bands as described by Kazanjian. Risdon has designed a similar pressure appliance to be attached to a dental splint cemented to the upper teeth. In cases where con-

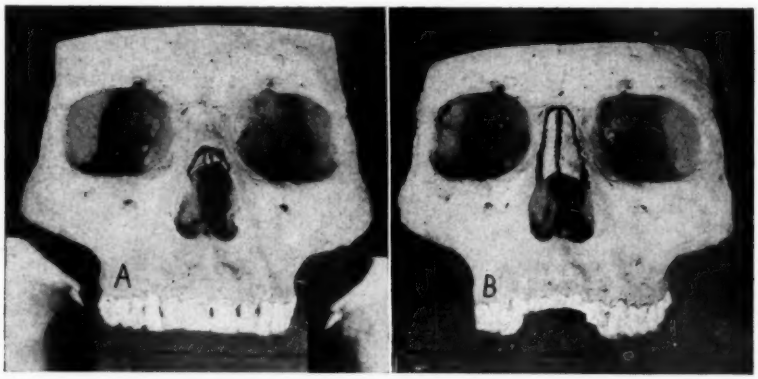



Fig. 6. Reconstructed models of depressed fractures of the nasal bones: *A*. Depressed tip. Insets—roentgenograms using dental films. *B*. Depressed fracture of the entire nasal bone.

Fig. 7. Markedly depressed fractures of the bridge of the nose. *A*. Fracture of the nasal bones, frontal processes of the superior maxilla with lateral displacements to override the internal margins of the orbit. *B*. Depressed fracture involving the frontal process of the maxilla, the ethmoidal, lacrymal, and nasal bones.

siderable difficulty is encountered in maintaining the proper position of the septum and tip of the nose and the upper bridge by the methods outlined, the patient should be advised that a perfect result is not always possible. Septal surgery and rhinoplastic procedures may be necessary at a later date to improve the breathing space and to restore the nose to the desired shape and midline position. This should be postponed for six months or more.

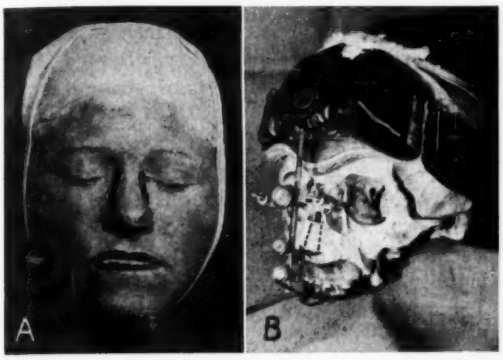



Fig. 8. *A.* Elevation of comminuted fractures of the nose by means of metal plates and through and through silver wires (J. B. Brown). *B.* Straith appliance for the elevation and support of markedly comminuted fractures of the nasal, lachrymal, ethmoidal bones, and the frontal process of the superior maxilla.

### Depressed Fractures of the Nasal Bridge

Blows on the lower third of the bony bridge frequently result in multiple fractures with slight depressions. Swelling may completely mask the presence of the depression and direct lateral x-rays should be taken using a dental film. If depression is present, the parts should be elevated with a thin blunt elevator and a small amount of lubricated antiseptic packing inserted high up to support the bones. The packing should be changed at least every other day.

Greater traumatism may fracture the nose through the frontal processes of the maxilla lateral to the nasal bones, and the fractured edges may spread laterally to override the basilar portions of the frontal processes. The nasal half of the bony bridge becomes markedly flattened and widened. Intranasal elevation of the parts followed by packing and external manipulation followed by the application of Safian or Joseph external splints will usually correct the deformity. Septal fracturing and overriding often complicate the treatment and the ultimate result may leave much to be desired.

Very severe traumatisms may produce marked comminution of the nasal bones and upper portions of the nasal processes of the maxilla with extreme depression of the fractured parts. The nasal bridge is driven backwards into the ethmoidal region to fracture the ethmoidal bones on both sides, and the inner margins of the orbital rims are displaced externally. The inner canthi are consequently displaced externally and frequently downward to a considerable extent to produce a very distressing deformity. In cases of this type, attempts to reposition the nasal bridge should be postponed for at least ten days in order to prevent if possible the development of meningitis. Treatment of these severe injuries is naturally complicated and painstaking. The Straith appliance is excellent for the elevation and support of the nasal bone:

Fig. 9. Asch septum straightening forcep used to reposition the nasal septum in the mid-line where it is maintained by intranasal splints and packing.

"Two rubber covered wire splints are inserted into the nostrils. By a simple mechanical device, these splints may be elevated, tilted to various angles, or shifted laterally, as the situation may require. The bridge may thus be maintained in proper position for several weeks. Two lateral pressure pads may be applied and adjusted separately to prevent spreading of the nasal fragments."

We have added an upper jaw dental splint to the Straith appliance to give additional support and fixation of the lower end of the vertical bar carrying the intranasal wire splints and lateral pressure pads. The greatest difficulty encountered in the treatment of these fractures is the correction of the external displacement of the orbital rim, and the subsequent maintenance of the fractured parts in their correct position.

Occasionally, a severe blow may completely separate the nasal bones from the glabella at the suture line, and the entire nose may drop a quarter of an inch or more. Usually, this type of fracture will be associated with a high horizontal complete fracture of the maxilla. The management of these combined fractures is that of the treatment of fractures of the maxilla in that the measures employed to raise and support the maxilla will usually elevate the nasal bones to their proper position in contact with the glabella. Should the maxilla not be fractured or reduction not complete, the nose may be brought up and its position maintained by drilling small holes through the nasal process of the frontal bones and through the upper end of the nasal bones—a 24 or 26 gauge silver wire passed through the holes and twisted will secure the bones in correct position.

### Fractures of the Nasal Septum

Fractures of the nasal septum may result from a blow on the lower half of the nose, and may occur without appreciable external deformity at the time of the injury. Cartilage unites by fibrous union, which may not adequately support the overlying cartilages and skin, and in course of time contraction of the scar plus minor traumatisms may produce deformity of the lower half of the nose. The treatment indicated is the routine control of nasal hemorrhage, the evacuation of a hematoma if present, followed by packing to prevent its recurrence. Every effort should be made to prevent the formation of a septal abscess.

Fractures of the septum with deformity are of several types.

1. A saddle nose with but a slight depression, or to the extent that a deep hollow is produced when the septal cartilage is fractured near its junction with the tips of the nasal bones.

2. Fractures at a lower level may be accompanied by a dropping of the tip cartilages.

3. Overriding of fractured portions of the septal cartilage may occur without deviation, and there will be varying degrees of nasal obstruction. The immediate treatment of these conditions is not very satisfactory, and it usually becomes necessary to resort to rhinoplastic surgery to restore the contour of the bridge or raise the tip after several months have elapsed. Submucous resection of the nasal septum is frequently indicated.

Fracture deviations of the nasal septum may occur with internal deformity, with external deformity, or with both conditions present.

The septal cartilage may be fractured and considerably bent to produce obstruction to breathing without any external evidence of the injury. The treatment consists of replacement of the deviated portion under local anesthesia followed by intranasal splinting or packing to maintain the septum in the midline position.

In some cases, the entire septum is dislodged from its lower attachments and displaced laterally. If the septal cartilage is fractured at the same time and bent or displaced from its attachment to the perpendicular plate, the replacement of the entire septum is usually satisfactory for a time but the cartilage deviation tends to recur, necessitating a submucous resection.

Fracture deviations of the lower portion of the septal cartilage may occur without an accompanying fracture displacement of the bony ridge. The treatment is manipulation of the displaced septum to a slightly over-corrected position to be maintained by intranasal packing reinforced by external splinting or adhesive tape.

The anterior edge of the nasal septum may be dislocated from its attachment to the vomer and may project at the nares with an accompanying deviation of the tip. This should be replaced and held by packing. If recurrence of the dislocation takes place, plastic correction is indicated to improve the breathing space and the appearance. If the nose is too long, it may be shortened at the same time.

### Summary

Lacerated wounds of the nose should be treated and sutured with great care in order to restore proper normal contour and alignment and prevent undue scarring.

Injuries of the nose accompanied by swelling or nasal obstruction should be investigated to de-

termine the extent of bone and cartilage injury and displacement to make possible adequate treatment to prevent subsequent deformity.

Fracture dislocations of the nasal septum may frequently be mobilized and manipulated to a reasonably satisfactory midline position. Submucous resection of the nasal septum may, however, be necessary at a later date to relieve nasal obstruction.

730 La Salle Bldg.

## Bibliography

1. Brown, J. B.: Fractures of the bones of the face. Surg., Gynec., and Obst., 68:564-573, (Feb. 15) 1939.
2. Kazanjian, U.: Injuries to the face and jaw resulting from automobile accidents. Trans. Am. Acad. Ophth. and Otol., 43:275-308, 1938.
3. New, G. B., and Erick, J. B.: The care of automobile injuries involving the face. Minn. Med., 23:1-8, (Jan.) 1940.
4. Safian, J., and Tamerin, J.: Recent fractures of the nose. Am. Jour. Surg., 31:10, 1939.
5. Straith, C. L., and De Kleine, E. H.: Surgery of the head and neck. Int. Abst. Surg., 66:9-15, 1938.

# TRANSFUSION REACTIONS AND ERYTHROBLASTOSIS FOETALIS CAUSED BY THE RH FACTOR

GEORGE N. AAGAARD, M.D.
Minneapolis, Minnesota

IN 1940, Landsteiner and Wiener[4] first showed that 85 per cent of humans had in their red blood cells an agglutinogen which could be demonstrated if human red cells were tested with serum from rabbits which had previously been immunized by injections of blood from Rhesus monkeys. Humans possessing this agglutinogen they designated Rh positive. Approximately 15 per cent of humans lacked this property in their red cells. They were called Rh negative. Reports which have appeared recently indicate that the Rh factor may be the cause of a large number of hemolytic transfusion reactions. A causative relationship to erythroblastosis foetalis now seems likely. In addition there is evidence which suggests that the Rh factor may be of some importance in the production of toxemia of pregnancy.

Transfusion reactions caused by the Rh agglutinogens and agglutinins were first described by Wiener and Peters in 1940.[1,3] In their cases the production of the Rh agglutinins in Rh negative patients was stimulated by a first transfusion of Rh positive blood; and a reaction occurred when a second transfusion of Rh positive blood was given later. It is not entirely clear why transfusion reactions on this basis do not occur more often, if the above percentage of Rh positive and Rh negative individuals is correct. Wiener and Peters offer two possible explanations: (1) that not all Rh negative persons are able to produce Rh agglutinins; (2) that subsequent transfusions of Rh positive blood are either not given or are not given at a time when a high titre of Rh agglutinins is present in the recipient's serum.

Erythroblastosis foetalis, which includes fetal hydrops, icterus gravis, and congenital anemia, has long been an etiological puzzle. In 1938, Darrow[2] suggested that it might be due to an antigen-antibody reaction between the infant's and mother's blood. In 1939, Levine and Stetson[5] described a case of transfusion reaction in a woman never previously transfused but who had just delivered a macerated fetus. They suggested that a dominant "immunizing property in blood and/or tissues of the fetus must have been inherited from the father." The mother, lacking this property, was immunized against it by the fetus in utero. In 1941, Levine, Burnham and others published papers,[1,7] which showed that the Rh agglutinogen was the "immunizing property" in a majority of the cases of erythroblastosis foetalis. It was shown[8] that 91 per cent of the mothers of infants affected with erythroblastosis foetalis were Rh negative, in contrast to the 15 per cent to be expected from the general population. In addition it was shown that 100 per cent of the affected infants and their fathers were Rh positive. It is likely, therefore, that the Rh positive fetus stimulates the production of Rh agglutinins in the mother's blood. The agglutinins formed in the mother gain access

From the Division of Internal Medicine, University of Minnesota Hospitals.
Presented before the Minnesota Society of Internal Medicine, Saint Paul, October 25, 1941, and the Minnesota Pathological Society, Minneapolis, January 20, 1942.

to the fetus, cause lysis of the fetal red cells and produce erythroblastosis foetalis.

In 1905 Dienst[3] suggested that toxemia of pregnancy might be due to incompatibility between maternal and fetal blood. McQuarrie[9] and Ottenberg[11] published papers in 1923 supporting this hypothesis. That incompatibility of fetal and maternal blood due to the Rh factors might play a rôle is suggested by the high incidence of symptoms and signs of toxemia of pregnancy which is found amongst mothers while carrying infants affected with erythroblastosis foetalis. This possible relationship certainly merits further study.

### Tests for Rh Agglutination

Ordinary agglutination technique will only rarely demonstrate the presence of Rh agglutination. The reaction is most pronounced at refrigerator temperatures. Wiener and Peters[13] described a sensitive technique which is as follows: One drop of a 2 per cent saline suspension of the donor's cells is mixed with two drops of the patient's serum, the mixture is chilled in ice water and centrifuged five minutes. The tube is gently shaken to resuspend the cells and agglutination is read macroscopically and microscopically. A control with patient's cells and serum is run to rule out agglutination due to an increased titre of "cold" agglutinins.

Recently Levine and co-workers[6] have described a different technique in which the mixture of donor's cells and patient's serum are incubated first for one hour at 37° C., then centrifuged at low speed for one minute, resuspended by gentle shaking and examined for agglutination as above. It would seem wise to carry out the procedure at refrigerator, room and body temperature if atypical agglutination is likely to be present, since the agglutinins are variable in the temperatures at which they act in vitro.

A further precautionary measure which may be employed is the biological test: the first 50 to 100 c.c. of blood is administered to the patient in not less than one hour. If no reaction occurs the remainder of the blood may be administered at a more rapid rate. That this measure is not completely reliable is borne out by several case reports[10,12] in the literature in which serious late reactions (oliguria, uremia, etc.) were noted without any immediate untoward symptoms (chills, fever, pain, etc.).

Indications for special studies to prevent reaction caused by the Rh factors are as follows: (1) If repeated transfusions are required for the supportive care of any medical or surgical patient (i.e., blood dyscrasias, chronic blood loss, pre- and postoperative care); (2) Any transfusion during pregnancy or the puerperium particularly if a history of obstetrical complications exists. A list of Rh negative donors should be available on every obstetrical service.

### Case Reports

M. H., a twenty-six-year-old white woman, was admitted to the University Hospitals on July 19, 1941. She stated that she had been delivered of a macerated fetus, born at full term on July 6, 1941. A midwife had attended her in the home. Edema of the lower extremities had been present for the last month and a half of the pregnancy, and no fetal movement had been noted for the last month. About ten days' postpartum abnormal bleeding occurred with the passage of large clots. At this time she also noted chilly sensations followed by a sense of warmth. She was admitted to the University Hospitals on July 19 because of these symptoms.

Inquiry into her past health revealed that she had had three pregnancies including her present illness. The first pregnancy was in 1938 and resulted in the birth of a normal male infant. No complications occurred. Her second pregnancy was in 1940, the infant lived only a few minutes and an autopsy revealed erythroblastosis foetalis. This was a full term pregnancy and no maternal complications occurred. The third pregnancy in July, 1941, resulted in a macerated fetus at full term, and the autopsy again revealed erythroblastosis foetalis.

Physical examination at the time of entry to the hospital revealed the following pertinent findings: temperature, 103°; pulse, 110; blood pressure, 125/85. Patient was pale. Abdomen revealed slight distention. The uterine fundus was palpable and tender 15 cm. above the symphysis pubis. There was also slight generalized abdominal tenderness and rebound tenderness. Large blood clots were present in the vagina. No placental tissue could be seen in the cervix.

Laboratory studies revealed the following: Blood group O (Landsteiner), (Group 4 Moss); Hgb. 4.9 Gms.; R.B.C. 2,310,000; W.B.C. 17,700; 86 per cent neutrophils. Urine: Albumin 1+, microscopic negative. Because of the anemia, five transfusions of citrated blood were given. In each case the donor was group O (Moss group 4), and in each case the blood was cross matched before administration and found compatible. Different donors were used for each transfusion. The first transfusion of 500 c.c. was given on July 19 without reaction. The second transfusion, given on July 21, was stopped after 200 c.c. had been given because of a severe chill, following which the temperature rose to 104.2° F. The third and fourth transfusions were given on July 23 and 24 respectively, 500 c.c. each and without reaction. On July 25, 500 c.c. of blood was given with-

out any immediate reaction but a few hours later it was noted that the patient passed grossly "bloody" urine. On July 26, the next day, the urine appeared grossly bloody but no red cells could be found on microscopic examination. On July 29 the blood pressure was 150/90 mm. Hg. Subsequent readings varied widely from 130/90 to 190/90. The blood pressure returned to normal on August 15. The urine showed 1 to 3 plus albumin and varying numbers of red cells, and returned to normal on August 20. The late appearance of erythrocytes in the urine, after the transfusion reaction, was not readily explained. The possibility of glomerular damage or of an actual glomerulitis was considered.

Unfortunately we were unable to obtain blood from the donors used in this case, since they lived at some distance from Minneapolis. However, the patient's serum when tested with the cells of 35 group O donors from our blood bank by means of the cold technique described above, showed agglutination with 77 per cent. With but two of these was agglutination observed when tested by the ordinary cross-matching technique. Red cells from the patient's husband, also Group O, were agglutinated by the patient's serum in dilutions up to 1 to 10. The control with the patient's own cells and serum was negative.

Since, in all the cases tested, the donor's cells did not contain ordinary A or B agglutinogens, it may be concluded that some other agglutinogen was present which caused the agglutination observed with the Wiener technique. This fact, together with the history of delivery of two infants with erythroblastosis foetalis, suggests that the Rh factors were the cause.

The second case is reported through the kindness of pathologist, Dr. Frank C. Andrus, and the staff of the department of Obstetrics and Gynecology of the Minneapolis General Hospital.

The patient, a woman aged twenty-nine years, was admitted to the Minneapolis General Hospital on June 5, 1941. She stated that one week previously she had attempted mechanical self-induction of abortion. She was approximately four months pregnant at that time.

Inquiry into her past health revealed that she had had four previous pregnancies. The first resulted in a full term delivery of a normal infant. The next three pregnancies ended in abortion although the stage of pregnancy and nature of the abortions are not known.

The patient was afebrile when admitted to the hospital. She was not bleeding. Attempts at medical induction of labor failed. Mechanical means were tried later. On June 21, 1941, she experienced a sudden hemorrhage. The next day a transfusion of 500 c.c. of homologous Group A blood was administered. A severe reaction began just as the transfusion was completed. The patient suffered a severe chill, the temperature rose to 103.6° F. and hemoglobinuria was noted within a few hours. Oliguria (a 24-hour output as low as 70 c.c. of urine) followed. A mild degree of nitrogen retention was noted. The patient gradually recovered.

Samples of the patient's and donor's blood were sent to Dr. Alexander Wiener. He reported that the patient was Rh negative and the donor Rh positive. Dr. Wiener believed it likely that Rh agglutinins in the patient were responsible for the transfusion reaction.

## Summary

1. The role of the Rh factor in the production of transfusion reactions and in the pathogenesis of erythroblastosis foetalis is reviewed.

2. Tests for Rh agglutinins are discussed and indications for their use are stated.

3. Two cases of transfusion reactions probably due to Rh factors are described.

## References

1. Burnham, L.: Common etiology of erythroblastosis and transfusion accidents in pregnancy. Am. Jour. Obst. and Gynec., 42:389, 1941.
2. Darrow, R. R.: Icterus gravis (erythroblastosis) neonatorum: examination of etiologic considerations. Arch. Path., 25:378, 1938.
3. Dienst, A.: Das Eklampsiegift; vorläufige Mitteilung. Zentrable. f. Gynäk., 29:353, 1905.
4. Landsteiner, K., and Wiener, A. S.: Agglutinable factor in human blood recognized by immune sera for rhesus blood. Proc. Soc. Exp. Biol. and Med., 43:223, 1940.
5. Levine, Ph., and Stetson, R.: Unusual case of intra group agglutination. Jour. A.M.A., 113:126, 1939.
6. Levine, Ph., Burnham, L., Katzin, E. M., Vogel, P.: The rôle of isoimmunization in the pathogenesis of erythroblastosis fetalis. Am. Jour. Obst. and Gynec., 42:925, 1941.
7. Levine, Ph., Katzin, E. M., and Burnham, L.: Isoimmunization in pregnancy; its possible bearing on etiology of erythroblastosis foetalis. Jour. A.M.A., 116:825, 1941.
8. Levine, Ph., Vogel, P., Katzin, E. M., Burnham, L.: Pathogenesis of erythroblastosis foetalis: statistical evidence. Science, 94:371, 1941.
9. McQuarrie, I.: Isoagglutionation in new-born infants and their mothers. Bull. Johns Hop. Hosp., 34:51, 1923.
10. Mandelbaum, H.: Hemolytic reaction following blood transfusion; report of case of intra-group incompatability. Ann. Int. Med., 12:1699, 1939.
11. Ottenburg, R.: Etiology of eclampsia, historical and critical notes. Jour. A.M.A., 81:295, 1923.
12. Wiener, A. S.: Hemolytic reactions following transfusions of blood of homologous groups; further observations on rôle of property Rh, particularly in cases without demonstrable isoantibodies. Arch. Path., 32:227, 1941.
13. Wiener, A. S., and Peters, H. R.: Hemolytic reactions following transfusion of blood of homologous groups, with three cases in which same agglutinogen was responsible. Ann. Int. Med., 13:2306, 1940.

# A SIMPLE METHOD FOR THE REMOVAL OF IODIZED OIL FROM THE SPINAL SUBARACHNOID SPACE

EDWARD H. JUERS, M.D. and HAROLD O. PETERSON, M.D.
Red Wing, Minnesota Saint Paul, Minnesota

IN 1919 Dandy introduced air myelography. In 1922 Sicard and Forestier first used Lipiodol in the subarachnoid space as an adjunct in the diagnosis of spinal cord lesions. It has since developed that iodized oil myelography is the most accurate roentgenologic method of determining the presence of a lesion within or encroaching upon the spinal subarachnoid space. Not only can most of the lesions be localized by this method but often it is possible to differentiate between the various types of abnormalities present. However, since these iodized oils are not absorbed from the subarachnoid space and since their continued presence may be harmful in some instances, there has been an urgent need of finding another contrast medium which is absorbable and non-toxic.

The only substances which have met these requirements are the gases such as air, oxygen, ethylene, etc. In recent years gas myelography has become very popular, especially for the diagnosis and localization of posterior herniations of the intervertebral disc. Most observers agree, however, that examinations using gas are less accurate than those using iodized oil and that the interpretation of the gas films is far more difficult. If it were possible to remove the iodized oils all the objections to their use could be dismissed.

When a laminectomy is done following an iodized oil examination it is possible to open the dura and remove some of the oil. However, it is usually not possible to obtain all of the oil.

In 1936 Lucherini described a method for the removal of Lipiodol from the spinal sac, in those cases where laminectomy was not done. He introduced a trocar into the most dependent part of the dural sac and, with the patient sitting up, the oil drained out. He did not obtain complete removal, however. In 1939 Briesen reported one case in which he bored a hole one-eighth of an inch in diameter in the sacrum through which he also introduced a trocar into the dependent dural sac. A long time was required for the oil to run out and again a complete removal was not obtained. Adson carried out a similar procedure about the same time in which he exposed the caudal sac over an area of seven to ten millimeters by removing a small part of the sacral lamina. He incised the dura and drained the oil off with the patient upright. Adson advocated that this procedure be used only in some of the cases which did not have a laminectomy following the oil examination. All these procedures are not simple, however, and not suitable for routine use.

In March, 1941, Kubik and Hampton reported a procedure in which the oil was successfully removed by simply aspirating it through a spinal puncture needle immediately on completion of the roentgenologic examination. At that time thirty cases were reported and many more have been added since. This effectual method of removal has eliminated all the objections to the use of iodized oils. Since there are so many cases suspected clinically of having a posterior herniation of the intervertebral disc, it is very gratifying to be able to verify this diagnosis roentgenologically using iodized oil knowing that the oil can be removed.

In October, 1941, we first carried out this procedure at the Interstate Clinic. Since that time thirty additional cases have been done at the University of Minnesota Hospitals and at the Interstate Clinic. A description of the technique introduced by Kubik and Hampton for the injection and removal of oil from the subarachnoid space is as follows: The patient is placed face down on a tilt-type fluoroscopic table. The site for the introduction of the spinal puncture needle is located by fluoroscopic examination and the point for the puncture marked on the patient's skin. The optimal site for the puncture is L-3 when the lesion is at L-4 or L-5. However, if the lesion is suspected to be at L-3 or higher the puncture should be done at L-4. The field is prepared in the usual manner for a spinal puncture. A sterile circumcision sheet has been found to be the most convenient type of drape. A sterile towel used as a flap is fastened to the drape to protect the operative field during the fluoros-

From the Interstate Clinic (Juers), Red Wing, Minnesota, and the Department of Radiology (Peterson), University of Minnesota, Minneapolis, Minnesota.

copy. The drape is held in position by taping it to the shoulders. This procedure keeps the drape from slipping out of position when the patient is tilted and no difficulty is encountered in keeping the field immediately around the spinal needle

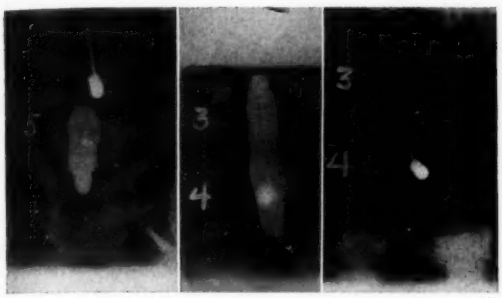



Fig. 1. *a*, Iodized oil filling the end of the normal spinal subarachnoid space. The spinal needle passes between the spinous processes of the 3rd and 4th lumbar vertebræ with the point located just to the side of the midline. This is not perfect position. *b*, Iodized oil in proper position for aspiration. *c*, Oil completely aspirated with needle still present.

sterile. An 18-gauge spinal puncture needle with a blunt point is carefully introduced and its position checked fluoroscopically to make certain that it is in the center of the spinal canal. The exact position of the needle has been found to be of the utmost importance for the successful removal of Lipiodol. Our poor results have occurred when the needle has not been centrally placed. The initial puncture should be very carefully done so as to avoid multiple punctures as this also causes poor results. When the needle has been properly placed 4 cubic centimeters of spinal fluid is removed and 4 cubic centimeters of Lipiodol is injected. The spinal puncture needle is left in position and covered with the sterile towel previously mentioned. The fluoroscopic examination is then carried out. One should be very careful not to jar the spinal puncture needle with the fluoroscopic screen. Spot films are made at any desired level by holding the film on the patient's back, above the needle, and making the exposure with the fluoroscopic tube. If desired, oblique and even lateral views can be taken by carefully rotating the patient into these positions. When the fluoroscopic and radiographic examinations have been completed, the oil is returned to the site of the spinal puncture needle. The sterile towel is folded back. The same 5 cubic centimeter syringe used for injecting the oil is attached to the needle and by extremely *gentle* traction on the plunger the oil is aspirated. The same syringe which was used for injecting the oil is preferable because the plunger and the barrel are well lubricated. This allows for easy manipulation without which *gentle* aspiration cannot be carried out. There is also less likeli-

Fig. 2. *a*, Arrow points to slight indentation produced by herniated disc. *b*, Almost all of the oil has been removed. *c*, Final result showing a few tiny droplets remaining.

hood of air leaking in around the plunger. If the patient complains of pain during the aspiration it usually means that a nerve root has been pulled up to the end of the needle. The suction should be stopped momentarily and the needle rotated slightly to overcome this difficulty. The aspiration is continued until spinal fluid appears. The needle is again covered with the previously mentioned sterile flap. The amount and location of the remaining oil is determined fluoroscopically and the position of the patient is changed if necessary, chiefly by tilting the table, in order to collect the oil around the tip of the needle again. Aspiration is repeated until clear spinal fluid again appears. Fluoroscopy and aspiration are repeated alternately until all the oil has been evacuated. In order to obtain the last few droplets of iodized oil it may be necessary to suck out a few cubic centimeters of spinal fluid. Including the 3 or 4 cubic centimeters of spinal fluid initially removed for laboratory examination it is not necessary to take out more than ten cubic centimeters for the entire procedure.

In our first cases we were not always successful in removing all of the oil. This was due to lack of appreciation of the points mentioned above. In the last twenty-four cases we have had uniformly good results.

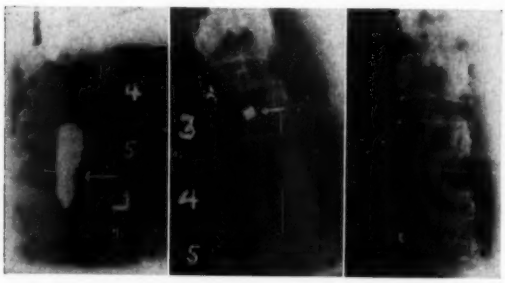


Fig. 3 *a*, Arrow points to ruptured disc at the lumbosacral junction. *b*, Arrow points to needle in perfect position between spinous processes of the 2nd and 3rd lumbar vertebræ. All the oil has been removed. *c*, A few tiny droplets of oil are visible after the needle is withdrawn.

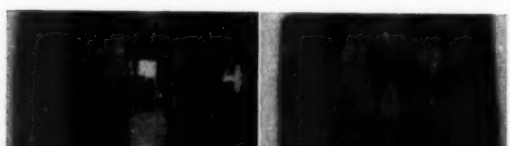


Fig. 5 *a*, Small indentation at the 5th lumbar vertebra on the left produced by a ruptured disc which was found at operation mostly lateral to the dural sac. *b*, All but a few tiny droplets have been removed. The needle is in excellent position.

## Summary

Kubic and Hampton have reported a new method for the aspiration of iodized oil from the spinal subarachnoid space. This consists of aspirating the oil through the same spinal puncture needle through which it was injected. We have used this method successfully in thirteen out of seventeen cases. Although the procedure is basically very simple there are several points in the technique which are essential for a successful aspiration. These are as follows:

1. The site for the puncture is best determined fluoroscopically.

2. The needle must enter the dural sac as close to the midline as possible. This position should be checked fluoroscopically before the oil is injected.

3. Multiple punctures must be avoided.

4. Very gentle suction using a small syringe (2-5 c.c.) is necessary to avoid sucking a nerve root or piece of membrane into the end of the needle.

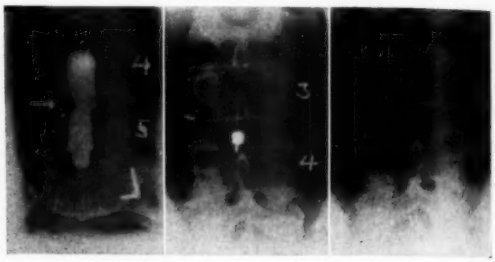


Fig. 4 *a*, Ruptured disc present between the 4th and 5th lumbar vertebræ on the right. *b*, Needle slightly to right of midline. All oil removed. *c*, Final film after removing needle.

## Bibliography

1. Adson, A. W.: Quoted from H. V. Briesen.
2. Briesen, H. V.: The removal of lipiodol after myelography. Am. Jour. Roentgenol., 642:525-528, (Oct.) 1939.
3. Dandy, W. E.: Roentgenography of the brain after the injection of air into the spinal canal. Ann. Surg., 70:397, 1919.
4. Dandy, W. E.: Diagnosis and localization of spinal cord tumors. Johns Hopkins Hosp. Bull., 33:188, 1922.
5. Kubik, Charles S., and Hampton, Aubrey O.: Removal of iodized oil by lumbar puncture. New England Jour. Med., 224:455-457, (March 13) 1941.
6. Lucherini (Quoted from H. V. Briesen): Diagnotsic value of spinal canal roentgenography after injection of iodized oil; method of removal of lipiodol from spinal sac. Policlinico (sez. prat.), 43:575-584, 1936.
7. Sicard, J., and Forestier, J.: Methode générale d'exploration radiologique par l'huile iodée. Bull. et mém. d. Hop. de Paris, 46:463, 1922.

# THE REMOVAL OF IODIZED OIL (LIPIODOL) FROM THE SPINAL CANAL AFTER ROENTGEN DIAGNOSIS

GORDON R. KAMMAN, M.D., F.A.C.P., and JOHN P. MEDELMAN, M.D.
Saint Paul, Minnesota

IODIZED poppy seed oil (lipiodol) still is considered the best contrast medium for roentgen diagnosis of intraspinal lesions. Although it has been in use for many years, and a large number of people are going about their daily tasks with several cubic centimeters of lipiodol floating around in their cranio-vertebral cavities, one cannot help but feel somewhat apprehensive about injecting a non-absorbable and potentially irritating substance into such an important space as that surrounding the central nervous system.

Nor is this apprehension entirely without foundation in clinical experience. Maclaire[2] reports one case in which lipiodol became encysted at the site of a lesion previously exposed by laminectomy and caused an unmistakable meningomyelitis. In spite of the fact that the oil was evacuated from these cysts at a second operation the cord damage was irreversible and the patient grew progressively worse and was totally disabled at the time of the report. Maclaire refers to his experience in this case as "horrible," and concludes that lipiodol should be used only as a last resort, and should be entirely restricted to those cases where laminectomy is to be performed within a few days, at which time oil can be liberated from the canal. Walsh and Love[4] defend the intraspinal use of iodized oil by saying that examination of the cerebrospinal fluid from twenty-four patients who had had intraspinal injections of lipiodol failed to show any clinical reactions that might not have been produced by a spinal or cisternal puncture with the withdrawal of cerebrospinal fluid alone. However, they do say that the injection of iodized oil into the subarachnoid space in certain cases in which partial or complete obstruction of the circulation of the cerebrospinal fluid exists, might accentuate clinical symptoms. Craig[1] feels that intraspinal inflammatory processes might be irritated by iodized oil. This view is supported by the experience of one of us (G.R.K.) who some years ago had the unfortunate experience of causing an acute exacerbation of symptoms in a patient who was given lipiodol because a cord tumor was suspected when she was in reality suffering from multiple sclerosis. This patient became permanently disabled and letters received from her for several years afterward were vituperative to say the least. Oldberg[3] states, "Anyone who has had perforce to dig about in the soggy mess which is the cauda equina of some unfortunate in whom 5 or 10 cubic centimeters of lipiodol had been optimistically injected a year or two previously will understand" that indiscriminate use of the substance in many sporadic cases where it is not indicated is harmful.

With these experiences in mind, it was welcome news when one of us (J.P.M.) learned from Dr. Aubrey O. Hampton, of the Department of Roentgenology of the Massachusetts General Hospital, of a method for overcoming the main objection to the use of lipiodol. He read a paper, as yet unpublished, describing the method for lipiodol removal, at the 1941 meeting of the American Roentgen Ray Society and the credit for introduction of the method belongs to Doctor Hampton and his associates. The objections to the use of lipiodol have been bound up in the fact that its removal has heretofore been considered impossible without opening the dural sac at operation and that, even in those cases which were operated upon, a large percentage of the material remained after an attempt at removal during surgery. A description of the method of removal as we have employed it, follows:

The entire procedure is carried out on the fluoroscopic table which must be equipped with a change-over switch to radiographic current so that films may be obtained during the examination for a permanent record of the findings. The patient is placed prone on the table and a preliminary fluoroscopy is done to locate the spinous process of the third lumbar vertebra. This is marked on the skin so that the lumbar puncture can be made at the interspace directly below. The lumbar puncture is then done at this level with the patient remaining prone. The level is important because in the average patient the maximum curve of the lumbar lordosis will cause the lipiodol to collect in the area when the patient is placed approximately horizontal. A 16 or 18 gauge needle is used. This should have as short a bevel as can be used for the purpose. It is

very important that the puncture be made in the midline and that the course of the needle does not deviate to either side. The roentgenologist can be of assistance in this regard by sighting from the foot of the table which is a more advantageous position for determining the direction of the puncture than is the operator's position directly above the patient. The normal pressure will cause the spinal fluid to flow through the needle when the dural sac is entered and fluid can be withdrawn into a syringe for laboratory procedures. The lipiodol is then injected. We use 4.5 c.c. Many workers use less but we feel that the larger amount is more satisfactory and cannot be objected to as long as it is to be removed later. The usual diagnostic procedures are then done with the spinal puncture needle being left in place.

After the necessary study of the dural sac, the lipiodol is removed. This is apt to be a tedious procedure. The patient is left in the prone position. A syringe is attached to the puncture needle. It is important that this syringe be small. One of 2 c.c. capacity is most satisfactory. Of course one has the advantage of visualizing by fluoroscopy the position of the mass of oil in relation to the tip of the needle in one projection as frequently as necessary but, even so, removal of the oil is difficult. The puncture needle must be held firmly between the thumb and forefinger of the operator's hands with the rest of the hand braced against the patient's body. A slow and steady pull by the other hand on the barrel of the syringe gives best results, using as gentle a pull as can possibly be used in causing the rather heavy oil to flow through the needle. Great force should not be used. At the beginning of the removal a fair flow of oil may be obtained. Later its flow is apt to be intermittent. This may be due to blocking of the tip of the needle by a nerve root. It may also be due to an improper level of the tip of the needle in relation to the oil in which case spinal fluid only is withdrawn. The level of the tip of the needle may then be slightly changed. If this does not bring about a return of the flow of oil it frequently helps to move the mass of oil away from the needle by tilting the patient and then to bring it back by returning the patient to

Fig. 1. Roentgenogram showing the amount of the oil injected and also the defect at the third lumbar interspace.

Fig. 2. Roentgenogram showing the amount of lipiodol remaining after aspiration. Note the presence of the needle which is not removed during the examination.

The quality of the roentgenograms is poor because they are made without a Bucky diaphragm.

the horizontal position. These maneuvers must be employed several times during the course of the removal of the oil.

Practically all of the lipiodol can be withdrawn by patient effort. A drop or two will always remain but the portion left is so small in amount that there can be no objection to its presence in the dural sac.

The following case report illustrates the working of this method:

J. W. was referred to one of us (G. R. K.) by Dr. J. W. Edwards of St. Paul, on March 5, 1941. The family and past histories were negative as far as Mr. W.'s present complaint was concerned, and there was no history of injury. About November 1, 1940, the patient began to notice a "soreness" down the left sciatic distribution. This was aggravated by activity and by January, 1941, Mr. W. was barely able to walk or to sit down. In March the positive neurological findings consisted of pain on left straight leg raising and impairment of touch and pain sense over both lower lumbar and first sacral dermatomes. Roentgenograms of the spine and pelvis were negative and the cerebrospinal fluid was normal with respect to dynamics, cell count, colloidal gold curve, total protein, and Wassermann reaction. The left sciatic pain persisted so that on March 22, 1941, air myelography was carried out. The findings were equivocal and the final diagnosis of Dr. Harold O. Peterson, roentgenologist, was "Possible lesion at the lumbrosacral junction such as a herniated disc, but a final conclusive diagnosis should not be made from these findings. The remainder of the lumbar canal is probably normal." Because of the persistence of symptoms and signs together with the suggestive x-ray findings, surgery was decided upon. Accordingly on April 5, 1941, Dr. Wallace P. Ritchie performed a partial laminectomy on the fifth lumbar vertebra and found a thickened ligamentum flavum. Beneath this a protruded intervertebral disc was found between the bodies of the fifth lumbar and first sacral vertebrae. This was removed. The patient made an uneventful recovery from the operation and was discharged twelve days afterward.

The next time Mr. W. was seen was on December 3, 1941, at which time he stated that eight weeks previously he had suffered a slight wrench to his back following which he experienced a burning sensation in the calf of his left leg. This was aggravated by motion and had grown progressively worse until the patient was forced to go to bed. The neurological examination was entirely negative but it was felt that a roentgen examination of the spinal subarachnoid space should be made. Because the air myelogram in March had been so inconclusive, it was feared that because there had been previous surgery the same contrast medium would give still less satisfactory information, and the lipiodol technique described above was decided upon.

There was definite evidence of a space taking lesion in the spinal canal at the level of the disc between the third and fourth lumbar vertebrae. Following the taking of spot films, the lipiodol was removed through the spinal needle, all of the oil being withdrawn except for a very small globule.

On December 10, 1941, Doctor Ritchie removed the laminae of the third and fourth lumbar vertebrae on the left side. No evidence of a protruded disc could be found, but the ligamentum flavum was extremely large so it was removed. Following the operation, Mr. W. made an uneventful recovery and left the hospital on January 10, 1942, greatly relieved of his pain but still having some discomfort in the posterior aspect of his left thigh.

## Conclusions

1. Iodized poppy seed oil (lipiodol) when injected into the subarachnoid space and allowed to remain there indefinitely is a potentially harmful substance.

2. A method is described by which the substance can be removed from the spinal canal immediately after roentgenograms are made.

## References

1. Craig, W. McK.: Use and abuse of iodized oil in the diagnosis of lesions of the spinal cord. Surg., Gynec. and Obst., 49:17-28, 1929.
2. Maclaire, A. S.: Lipiodol in neurosurgery. Am. Jour. Med. Sci., 170:874-880, 1925.
3. Oldberg, Eric: A plea for respect for tissues of the central nervous system. Surg., Gynec. and Obst., 70:724-725, 1940.
4. Walsh, M. N., and Love, J. G.: Meningeal response following subarachnoid injection of iodized oil. Proc. Staff Meetings Mayo Clinic, 13:792-793, (Dec.) 1935.

---

### NOISE TO PLEASE ONESELF

"One makes noise to please oneself and language to please mothers and, later, neighbors." This sums up the child's own feeling about a conflict which makes some children stutter, in the opinion of Dr. John A. Rose, of the Winston-Salem, N. C., Child Guidance Clinic and the Bowman Gray Medical School.

Primary function of speech is self-expression. Imposed on this is the function of communication. When families and their social group place much emphasis on this second function of speech, perhaps hero-worshiping political and religious orators, the child may either struggle against this attitude and become a stutterer or he may take on the family attitude and become a "verbalist."

Fundamentally, stuttering and other speech disorders like feeding and school problems, arise from a "troubled child-parent relationship."

The child guidance clinic, working as it does with both child and parents, therefore has a chance, Dr. Rose believes, even with its limited time, to help with the speech difficulty.—*Science News Letter*, February 28, 1942.

# BOILED LIVER EXTRACT IN TREATMENT OF ACNE VULGARIS

C. A. BOREEN, M.D.
Minneapolis, Minnesota

IN March, 1940, Wallace[1] made a preliminary report on the use of subcutaneous injections of boiled liver extract in the treatment of acne vulgaris. The active ingredient was supposed to be a specific skin factor which he called factor S. However, the number of cases treated was small. He states the treatment was fairly successful.

During the fall and winter of 1940 and 1941 I had the opportunity of treating a series of cases at the Students' Health Service of the University of Minnesota. The number of students treated was fifty. There were nineteen females and thirty-one males. The average age was nineteen. The cases were selected at random, and they varied from mild to severe pustular acne.

The liver extract was obtained from a pharmaceutical house and boiled for thirty minutes. The extract was supplied in 5 c.c. ampules and each patient was treated from his individual ampule. The dose recommended was 0.4 c.c. This dose was given twice a week for six weeks, and the results were tabulated at that time as follows: twenty patients showed no improvement; twenty-three showed slight improvement; and in seven there was marked improvement.

The fifty students were given a similar course of treatment with liver extract obtained from another pharmaceutical house, but the dosage was 0.8 c.c. twice a week. The results at the end of this series of injections was the same as in the first course of treatment. Those who showed no improvement after the first course of treatment showed no improvement after the second. Those who showed slight improvement continued to improve slightly and those who showed marked improvement continued to improve slightly.

The average number of injections given for both series was twenty. In the second series some of the students did not receive the twelve injections prescribed.

The only other treatment given during the course of treatment was the local application of a mild astringent solution.

Those who showed considerable improvement were all of the mild type of acne. The improvement probably can be ascribed to the astringent solution used plus some tonic effect of the liver extract rather than a specific skin factor S.

One patient (Case 4), with no improvement with liver extract, was given six x-ray treatments. The dosage at each treatment was eighty Roentgens and was given once a week. There was considerable improvement. Another (Case 7) had received twenty x-ray treatments in Honolulu over a period of two years. The dosage was not known but must have been rather small. Naturally we did not give any more x-ray. A course of liver extract was given with no appreciable effect. She did say that the x-ray had helped her considerably. Another (Case 15) showed no improvement with liver extract but considerable improvement after six x-ray treatments. In Case 22 there was no improvement with liver extract but marked improvement after four x-ray treatments.

One patient (Case 25) had a constitutional reaction from the injections. She became nauseated after each treatment and the injections were stopped after the sixth treatment. There was a slight improvement. She was then given x-ray treatments. She received only three, but there was considerable improvement.

## Summary

Fifty patients with acne vulgaris of varying degree were treated with subcutaneous injections of boiled liver extract. Twenty showed no improvement; twenty-three improved slightly; and seven improved considerably. The few who were later treated with x-ray showed considerable improvement.

## Conclusions

1. The treatment with boiled liver extract has been disappointing.
2. When local treatment fails, x-ray therapy should be instituted.

## Reference

1. Wallace, Marshall: Journal Lancet, (March) 1940.

From the Students' Health Service of the University of Minnesota.

# CLINICAL-PATHOLOGICAL CONFERENCE

MINNEAPOLIS GENERAL HOSPITAL

Frank C. Andrus, Pathologist

## Presentation of Case

DR. THOMAS A. PEPPARD: The case is that of a fifty-three-year-old white female office worker whom I saw in consultation with a physician on September 8, 1941, and subsequently. The family history is not pertinent. The patient stated that she had been told by her mother that as an infant her mother, while holding her in her arms against her chest, could feel the baby's heart pounding. As a child she could not indulge in the usual activities with the other children but was forced to sit at one side and watch them play. She had had mumps, catarrhal jaundice, and influenza. She had had no operations. Her menopause had occurred at the age of fifty-two years. She had been employed for many years as an office worker and could carry on that job without any inconvenience. On or about August 27, 1941, she had her beginning symptoms which included occipital headaches, nausea, and vomiting. Later she felt weak and found that she had a fever, her temperature being 103 degrees. She had no chest or abdominal pains. Her weight upon admission was 150 pounds and she had maintained that weight for some time. There was no considerable expectoration or chronic cough. She was admitted to a private hospital with a fever of 102.4 degrees, pulse 112 per minute, and respirations 24 per minute. A tentative diagnosis of pneumonia was made.

*Laboratory Data.*—The specific gravity of the urine varied between 1.002 and 1.018; it was negative for albumin on some occasions and on other determinations showed a trace. There were no casts or red blood cells at any time. The hemoglobin was 80 per cent on September 2, 1941. The leukocyte count was 11,500 on admission but subsequently dropped to 7,800 and 8,600. On October 10, 1941, a month after admission, the hemoglobin dropped to 74 per cent. She raised some sputum which upon examination showed many organisms, mostly streptococci. Agglutination tests were done but were negative. An x-ray plate taken on September 11, 1941, showed a slight degree of cardiac enlargement with a generalized increase in bronchovascular markings in both lungs with scattered areas of infiltration. She was given sulfonamide drugs in addition to supportive therapy without any appreciable change in her condition. Her temperature ranged between 99 and 100 degrees in the mornings and to about 102 degrees in the evenings; it continued at those levels throughout her hospital stay.

I saw her on October 8 and October 15. She was breathing with some apparent respiratory effort although she stated that she was not short of breath. There was slight general cyanosis. Careful search revealed no petechiæ on the skin or mucous membranes at any time. There was no adenopathy. The radial pulse dropped back quickly, more so when the arm was raised. Pulsation was felt in the fingertips and capillary pulsation was noted in the fingernails. There was no clubbing of the fingers or toes. There was normal pulsation in the femoral and dorsalis pedis arteries. A systolic sound was heard over the femoral artery but it was not "pistol-shot." No Duroziez murmur was heard. There was no subcutaneous edema. The blood pressure in the arm was 140/65 and in the leg 170/96. The blood pressure on admission had been 154/70. The heart appeared to be slightly larger than normal. A systolic thrill was felt in the second left interspace, more noticeable on expiration. There was normal sinus rhythm. In the first, second, and third interspaces, but more especially in the second, the normal heart tones were largely replaced by a rather harsh, blowing continuous murmur. This murmur was transmitted downward over the sternum. The lungs were resonant anteriorly and posteriorly except for a small area in the region of the right hilus. There were no pleural rubs or any evidence of fluid in the pleuræ. The breath tones were vesicular throughout. At both bases posteriorly, more numerous and extensive in the right base, fine moist rales were heard. There was normal transmission of whispered and spoken voice sounds. The liver was palpable but was not considered to be enlarged. The spleen was enlarged, readily palpable, but not tender. There was no abdominal rigidity, no masses, and no tenderness.

My diagnosis was patent ductus arteriosus with subacute bacterial endocarditis. There were no evidences, however, of embolic phenomena at any time during her stay. I considered that it might have been possible that she had some pulmonary emboli at the time of onset. She had a reasonably good appetite and a sense of well being not common to patients with bacterial endocarditis. She did not develop any anemia as rapidly as such patients often do. A blood culture taken on November 6 revealed a growth with characteristics of Streptococcus viridans. The patient was discharged from the private hospital on November 2, 1941.

DR. H. PERLMAN: Following her discharge from the private hospital, she went to a rest home. Three weeks before admission to the Minneapolis General Hospital, she developed dyspnea, orthopnea, and swelling of the legs. She was admitted to this hospital on January 22,

1942. Physical examination on admission revealed a generalized pallor. She was moderately dyspneic and orthopneic. Rales could be heard at both bases of the lungs. The other physical findings were the same as observed previously by Dr. Peppard. The blood pressure at this time was 128/46. A fluid wave and shifting dulness could be exhibited over the abdomen. The liver was palpable 3 cm. below the right costal margin. The spleen was again palpable. There was a three plus pitting edema of the feet and ankles. Slight cyanosis of the fingernails was noted. The venous pressure was 10 cm. of citrate solution. There was no evidence of petechiæ at this time.

*Laboratory Data.*—The hemoglobin was now 55 per cent, the erythrocyte count 2,800,000, leukocyte count 3,800, and the differential count 82 per cent neutrophiles, 14 per cent lymphocytes, and 4 per cent monocytes. The urine had a specific gravity of 1.014; it contained a trace of albumin, no sugar, no hyaline casts, 3 to 5 granular casts, and numerous red and white cells. An electrocardiographic tracing showed left axis deviation, slurring of the QRS complexes in all leads, and slight depression of $ST_3$. Repeated urine examination revealed from a trace to two plus albumin. The blood urea nitrogen was 28 mg. per cent. The phenolsulphonephthalein excretion test showed a total of 19 per cent in two hours. A blood culture showed Streptococcus viridans.

The patient was put on a cardiac regime with limited fluids. She was digitalized and responded nicely. A few days after admission all evidence of decompensation was gone. On January 29 fresh petechial hemorrhages were noted in the conjunctiva of the left eye. The patient was given repeated blood transfusions which raised her hemoglobin to 89 per cent. The erythrocyte count was 4,780,000 and the leukocyte count 13,400. She was given sulfathiazole which had to be discontinued after five days because she complained of nausea and vomiting. The blood urea nitrogen on the 12th hospital day had risen to 35.7 mg. per cent. Her entire course in the hosptial was afebrile. Ligation of the ductus was suggested so the patient was transferred to the surgical service on February 5, 1942. Intratracheal administration of cyclopropane was started. The patient stopped breathing after twenty minutes of anesthesia and before any operative procedure could be carried out.

*Clinical Diagnoses.*—(1) Patent ductus arteriosus; (2) Subacute bacterial endocarditis.

(Roentgenogram shown.)

DR. E. T. BELL: Would you say there was any hypertrophy of the right heart?

DR. OLSON: This is the only film taken and shows only left enlargement.

DR. BELL: You do not see anything there that you could interpret as a dilated pulmonary artery?

DR. OLSON: The vessels seem to be enlarged and there is congestion in both bases.

### Autopsy Findings

DR. R. PAPERMASTER: At the time of autopsy no petechial hemorrhages were noted upon careful examination. The heart weighed 490 grams. This weight included the great vessels as we wanted to keep the specimen intact. There was hypertrophy of the left ventricle. There was a patent ductus arteriosus measuring 12 mm. in its external diameter. It arose just beyond the left subclavian artery. There was a semilunar fold just proximal to the external orifice of the ductus arteriosus projecting 6 mm. into the lumen of the aorta. This fold included one-third of the circumference of the aorta. The internal diameter of the ductus arteriosus was 3 mm. in its contracted state. The right auricle and ventricle were not dilated. The tricuspid and pulmonary valves were normal. The root of the pulmonary artery measured 95 mm. in circumference (normal 70 mm.). A patch of vegetations 2 cm. in diameter were present in the conus 1 to 3 cm. above the pulmonary valve. The vegetations were also found surrounding the pulmonary orifice of the ductus arteriosus. The internal pulmonary orifice of the ductus was 3 mm. in diameter. Two recent vegetations were also seen on the medial leaflet of the mitral valve.

There were two infarcts in the lower lobe of the left lung. The spleen weighed 520 grams and showed septic splenitis. The liver weight 1,720 grams and showed evidence of a long standing chronic passive congestion. The kidneys were normal grossly. The remainder of the examination showed nothing of note.

DR. ANDRUS: Microscopic sections of the myocardium show an extensive acute exudative myocarditis with small abscesses and necrosis of muscle fibers. The lesions on the mitral valve and in the pulmonary artery are characteristic vegetations of subacute bacterial endocarditis. The tufts of some of the glomerular capillaries were thrombosed giving the "focal" or "embolic" nephritis so often found in cases of bacterial endocarditis. The pulmonary infarcts had gone on to abscess formation.

*Anatomic Diagnoses.*—(1) Patent ductus arteriosus; (2) Subacute bacterial endocarditis; (3) Exudative myocarditis; (4) Focal or embolic glomerulonephritis; (6) Myocardial insufficiency; (6) Pulmonary infarction and abscesses.

DR. BELL: This is marked dilatation of the pulmonary artery. I don't know why there was hypertrophy of the left ventricle and not of the right. This is the picture of an arteriovenous aneurysm. That is why the left heart is hypertrophied and why the pulmonary artery is dilated. I should think that the pressure in the pulmonary artery would be increased.

DR. M. SHAPIRO: Practically all of the cases that have been reported show that young people have hypertrophy of both right and left ventricles. This is the only one I have seen that had left axis deviation.

DR. BELL: The right ventricle is not dilated; but you can't understand why the right side is not hypertrophied when it must work against increased pulmonary pressure.

DR. SHAPIRO: How long was the ductus?

DR. ANDRUS: The two vessels were in apposition.

DR. BELL: That is the way they usually are.

DR. ANDRUS: How large is this opening in most cases?

DR. BELL: A pretty fair size opening—3 mm. That makes quite a leak. But it isn't evidently the most severe type because this woman was 53 years old and her trouble was from endocarditis more than from the cardiac anomaly.

DR. SHAPIRO: Whenever a new thing like this operation comes out, we are inclined to rush in and try to help these patients. Among the men who have studied this condition, it is the opinion that this operation should be done in children as young as possible but then only if they are beginning to show signs of beginning cardiac disability. Jones had a number of patients in whom the heart size and the blood pressure returned to normal.

**Summary**

DR. PAPERMASTER: This condition occurs twice as often in females as in males. In Abbott's series of 150 cases, it was found associated with other congenital defects in two-thirds of the cases. In the ninety-two cases with patent ductus arteriosus as the only cardiac anomaly, the maximum age was sixty-six years, the average age at death twenty-four years. This included twenty cases who died in infancy. The patent ductus arteriosus represents a persistence of the left sixth aortic arch. In some cases, when associated with certain other cardiac anomalies, it acts as a compensatory mechanism to maintain life.

It is generally assumed that a continuous leakage takes place from the aorta to the pulmonary artery (arteriovenous shunt) because the pressure is high in the aorta. This pressure relationship is maintained until some respiratory obstruction sets in, as prolonged crying or coughing, when the pressure in the pulmonary artery becomes greater, a venous-arterial shunt occurs and there is a transient cyanosis. The fact that the pulmonary artery is practically always dilated, and the left ventricle is usually hypertrophied, more than the right, is evidence that the flow is usually arteriovenous. Also, in the infective process that supervenes, the pulmonary end of the ductus and adjacent tissues is always the initial seat of the vegetative inflammatory lesion suggesting that this is the site of strain of a continuous arteriovenous shunt. This leakage of blood from the high pressure aorta to the low pressure pulmonary artery results in a fall in peripheral diastolic pressure and a rise in pulmonary pressure. Subacute bacterial endocarditis is relatively more common in patent ductus arteriosus than in other congenital heart lesions.

The diagnosis of patent ductus arteriosus is made by physical and x-ray findings. These patients show poor physical development. Physical findings typically consist of the so-called machinery murmur heard over the left upper chest anteriorly and a marked thrill over the same area. However, the murmurs and thrills may be absent if the ductus is very large. Maude Abbott states that only about one-third of the cases have the typical murmur. There may be only a systolic murmur, especially in children. Enlargement of the pulmonary artery to percussion may be demonstrated. Absence of cyanosis in the presence of these other findings is an important diagnostic feature. The systolic pressure is normal and the diastolic pressure is low in typical cases. Peripheral signs of aortic regurgitation may be found.

Treatment of patent ductus arteriosus has been limited to the usual treatment of its complications, especially heart failure and bacterial endocarditis. A new treatment has recently been described, namely, ligation of the ductus. Gross has reported thirteen cases of successful ligation of the patent ductus arteriosus. One case died two weeks postoperatively due to Staphylococcus aureus infection. Only one other case derived no benefit from the procedure. Gross noted the following benefits in his cases: (1) the thrill ceased; (2) the diastolic pressure rose but the systolic pressure remained normal; (3) the activity and excursion of the heart decreased; (4) growth and development improved; (5) dilatation decreased but hypertrophied hearts did not change; however, the cardiothoracic ratios approached normal in one and one-half to two years postoperatively; (6) those who had had episodes of orthopnea, dyspnea, and cyanosis no longer had them; (7) there was a subjective and objective increase in ability for physical activity. Jones, Dolley, and Bullock reported thirteen cases successfully ligated. One of these died of subacute bacterial endocarditis. The possibility of treating bacterial endocarditis in cases with patent ductus by ligation has also been advanced. The first case of subacute bacterial endocarditis cured by ligation was reported in 1940 by Touroff and Vasell. In this patient the ductus was divided and doubly ligated. The blood became sterile and the patient was reported to be living and well thirty-six weeks after operation. These workers also report three other similar cases, two died of hemorrhage at the time of operation, one died thirty-two weeks postoperatively of bacterial endocarditis.

## CASE REPORT

# ESOPHAGEAL PERFORATION FROM A STOMACH TUBE

JAMES M. HAYES, M.D.
Minneapolis, Minnesota

PERFORATIONS of the esophagus have been reported quite frequently but so far as I know perforation of the esophagus by means of a soft rubber stomach tube has not been reported.

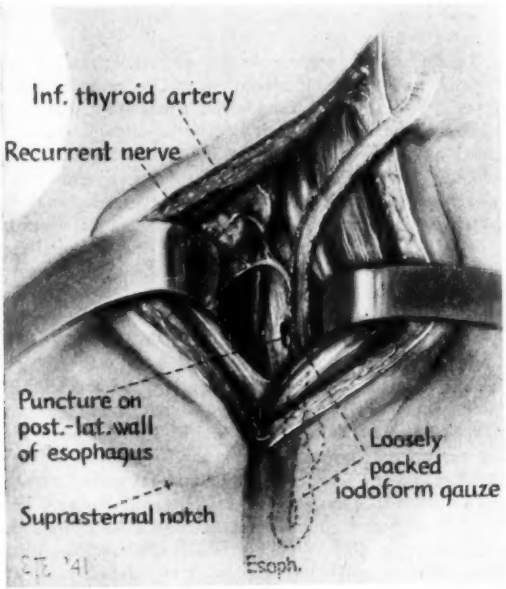



Fig. 1. Structures involved in operative procedure.

Perforations of the esophagus are usually classified under three main types:

1. Slowly perforating, or erosion by a foreign body lodged in the esophagus.
2. Minute perforations, such as those made by pins, fishbones and the like.
3. Gross, immediate perforations produced by instrumentation or tearing of the wall during removal of a sharp body.

In the first two, an inflammatory process may be set up that produces a protective mechanism that prevents the extension of the infection into the posterior mediastinum.

The third is the most serious and the resulting signs and symptoms are the most pronounced. Local pain and that radiating into the chest and shoulder is usually severe immediately. Emphysema may develop rapidly. The patient becomes very ill almost at once, and evidence of shock comes on early. Fever and leukocytosis develop early.

The extension of infection from the perforation into the mediastinum is the dangerous factor. The arrangement of the facial planes in the neck is an interesting study as related to the extension of the infection into the mediastinum. I shall not, however, attempt a discussion of these planes in this paper. Pearse has well described the anatomy of these planes. From his discussion it would seem that a perforation of the esophagus on the anterior or lateral surface would be less likely to result in the extension of the infection to the mediastinum than in the case of a posterior perforation. According to Pearse the retrovisceral space is the most important highway of communication between the neck and chest. Perforation of the thin posterior wall of the cervical esophagus brings the retrovisceral space in contact with infection. This in turn is in direct communication with the posterior mediastinum, one of the most dangerous areas in the human body for acute infection to lodge. When this takes place, without time for a walling off process to take place, a surgical emergency exists in which time is an important element.

### Case Report

Mrs. R. O., aged 53, was normal physically up to the time of this accident. About 6 p.m. she was eating a chicken dinner at home. Suddenly something lodged in her throat, and she became quite desperate. Her daughter ran to the phone and called a doctor living close by. The daughter was very much excited and told the doctor to come in a hurry, that her mother was "choking." He picked up a soft rubber stomach tube and rushed over to the house immediately. When he arrived the mother seemed in desperate condition. She was cyanotic, apparently not breathing and in marked collapse. He immediately attempted to pass the stomach tube, hoping to dislodge the material in the esophagus. She did breathe better for a short time, but the pain was intense so she was rushed to Asbury Hospital where Dr. Boies was called and passed the esophagoscope. He extracted a small piece of bone from the upper esophagus. At the same time he observed a perforation in the posterior left area of the esophagus. She continued to have severe pain, dyspnea and dysphagia, and the following day a marked emphysema developed in the left side of the neck and out over the left shoulder.

I saw her about noon on the following day and operation was begun about 2 p.m. that same day.

*Operation.*—An incision was made in the left side of the neck along the lower medial border of the sternocleidomastoid muscle. This muscle was then retracted,

*(Continued on Page 306)*

Reported before the Minneapolis Surgical Society May 1, 1941.

## HISTORY OF THE MINNESOTA STATE MEDICAL SOCIETY

By ARTHUR S. HAMILTON, M.D.
Minneapolis, Minnesota

*(Continued from March issue.)*

### Third Semi-Annual Meeting

The third semi-annual meeting of the State Medical Society was held at Minneapolis, June 13 and 14, 1871, in the Pythian Hall, with fifty-four members present. A letter of regret at his inability to be present was read from Dr. Samuel Willey, whose health had required his removal to Bayfield, Wisconsin, and a committee was appointed to send greetings to him.

Drs. A. E. Ames and N. B. Hill, delegates from the Minnesota State Medical Society, reported the meeting of the American Medical Association at San Francisco. The two interesting items in their report were the comment on Dr. Hewitt's paper on "Climatology of Minnesota," which had been very favorably received, and the action on the reception of delegates to the American Medical Association from "female colleges" already discussed.

Those elected to membership at this meeting are listed at the end of the volume. Dr. A. A. Ames, of San Francisco, was elected an honorary member.

Later it was agreed to extend the annual meeting from two to three days, but there is no evidence that the change was actually made effective at the next meeting.

Dr. Brewer Mattocks of Saint Paul, as essayist for the meeting, read a paper on "Diseases of Children." Dr. Mattocks said in his paper that the nature and treatment of diseases of children was the same in principle as in the diseases of adults; that the matter of children's diseases was not a specialty in the profession and that children were governed by the same laws of being as adults. His views were sharply contradicted by Dr. Hewitt, of Red Wing, who took the ground that the child was an imperfect immature being, whose pathologic conditions were essentially distinct from those of human maturity.

A very elaborate dinner was served to the members by Dr. and Mrs. A. E. Ames at their new home at Fourth and Ames Streets on the evening of June 13. The doctor's grounds were exceptionally beautiful and the banquet included everything good to eat but the next morning's *Tribune* informs us that dancing, cards and wine were tabooed.

On the following morning, and after much discussion and considerable opposition, Dr. Stone's bill legalizing dissection, to be presented to the next Legislature, was adopted.

Dr. W. W. Mayo reported a case of rectocele of fourteen years' duration which was finally cured, and Dr. C. G. Goodrich reported a case of ovarian cyst in a child of eight years.

Dr. Stone, as editor of the *Northwestern Medical and Surgical Journal*, referred to the articles of Mattocks, Mayo and Goodrich as the most noticeable features of the meeting. All appear in the Transactions for 1872, and Dr.

Mayo's report is also found in the *Northwestern Medical and Surgical Journal*, Vol. II, No. 1.

In an editorial of July, 1871, in his *Journal*, Dr. Stone urged that all regular physicians join the State Society and, to make this effective, he advised that a law be passed forbidding members of the Society to consult with anyone not also a member of the Society.

### Fourth Annual Meeting

The fourth annual meeting of the Minnesota State Medical Society was held in the United States Court Rooms in Saint Paul, on February 6 and 7, 1872. Dr. Franklin Staples presided and seventy members were present.

New members were elected and later in the meeting Dr. A. E. Ames introduced Professor Thayer, formerly of Vermont, who appears to have been connected with the Northern Pacific Railway. He was cordially received and elected an honorary member.

It was again reported that no essays had been received in the contest for the prizes offered.

Dr. A. B. Stuart, from the special Committee on Legislation, reported a memorial and Bill to establish a State Board of Health, which was accepted and ordered printed.

For some years past it had been the custom for Iowa, Wisconsin and Minnesota to appoint official representatives to each other's annual meeting. On this occasion, Dr. Marks was present from the Wisconsin State Society, probably the first official delegate to actually appear at a Minnesota State meeting.

Dr. Stone announced that the bill formerly known as the bill to legalize dissection but now more euphoniously known as the Anatomy Bill or the Bill to Promote the Science of Medicine and Surgery in the State of Minnesota had been laid before the legislature and would undoubtedly pass if it met with the *unanimous* approval of the Society, which unanimous approval was accordingly given.

In the course of preceding years a rather elaborate system of committees and delegates dealing with different phases of medicine had gradually grown up, and at this time included the following: Executive Committee; Finance Committee; Publication Committee; Committee on Ethics; Committee on Medical Societies; Board of Censors; Essayist for the Annual Meeting; Delegates to American Medical Association; Delegates to Wisconsin State Medical Society; Delegates to Iowa State Medical Society; Committee on Necrology; Committee on Epidemics, Climatology and Hygiene; Committee on Practical Medicine; Committee on Surgery; Committee on Obstetrics; Committee on Gynecology; Committee on Ophthalmology; Committee on Materia Medica; Committee on Medical Education; Committee on Medical Jurisprudence; Committee on Diseases of the Nervous System; Committee on Prize Essays.

Most of these committees from time to time made special reports, but that of Dr. Sweney's Committee on Epidemics, Climatology and Hygiene for this year, deserves special mention. It appears in the current transactions† and covers nearly sixteen pages. The Committee had sent out a questionnaire to all practitioners of the state in good standing, numbering about one hundred and fifty, but only eighteen responses were received. Goodhue County particularly distinguished itself, in that every regular practitioner save one answered.

In view of the elaborate observations reported from Dr. Sweney's committee,

†Trans. Minn. State Med. Soc., pp. 60-76, Feb. 6 and 7, 1872.

it is impossible to give any satisfactory abstract, but it should be stated that the findings cover a wide range of clinical conditions and deserve high commendation. They still make a distinction, though not clearly, between enteric or true typhoid on the one hand, and typhomalaria on the other. Clinical distinctions are discussed at considerable length but the wide difference in the type of cases reported from different localities make one feel that they did not all use the same terms with the same value. In not one instance are the anatomic features of typhoid invoked for diagnosis or even described. The general statement is made that enteric fever shows a decided decrease for the year and there is also a much less widespread appearance of the enteromalarial form. Paludal fevers have been more than usually prevalent though generally of a mild type and, whatever this paludal disease may have been, it certainly had many of the characteristics of enteric fever. Some localities reported remittent fever as much more prevalent than intermittent, while others state that the conditions are exactly the reverse.

The discussion as to the climate and phthisis still goes on. "Strumous" children frequently lose all trace of the disease, and "scrofula" is less frequent and less severe than in the East. Phthisis pulmonalis in its early stages is generally benefited but there is obviously a growing doubt that the late stages are in any way helped.

From the Committee on Surgery, Dr. Hewitt gave a very well prepared résumé of "The History and Rationale of the Antiseptic Treatment of Wounds," and the following is quoted from the report of the Committee on Surgery as showing the line of surgical thought:

> The special topics proposed involved many important questions now under discussion by surgeons, e.g.: The Germ Theory of Disease; Antiseptic Treatment of Wounds; Kind and Form of Sutures; Use of Solutions, Oils, Unguents, Poultices, Glycerine, Alcohol, etc.; Frequency of Dressing; Effect of Diathesis, Position and Temperature and the Aids Available through the General System, as Iron, Opium, Ergot; Union by First Intention; Union by Second Intention; Management of Ulcers and the Use of Transplanted Skin; Counter Irritation as a Surgical Remedy.

Dr. Staples read his address on "Professional Ethics." He congratulated the Society on its progress. In its three years of existence it had gathered 143 members and had lost two by death. Dr. E. H. Smith, former secretary of the State Society, died of phthisis pulmonalis on February 12, 1871, and Dr. Perry Chance died at Delano on November 19, 1871. Four members of the Society had moved from the state during the year.

In his inaugural address on February 7, Dr. Mayo, the new president, paid his respects to the retiring president, Dr. Staples, and especially to the preceding officer, Dr. Samuel Willey, who appears to have been held in the very highest esteem by his fellow practitioners.

The Society was still eager to dispose of its prize essay fund and reported the following subjects for prize essays for the ensuing year:

1. *Phthisis Pulmonalis.*
2. *Rheumatism and Catarrh as Elements in Uterine Disease.*

Dr. Hewitt proposed the following amendments to the By-Laws governing the Society:

> The general meetings of this Society shall be restricted to the morning sessions, and the afternoon and evening sessions shall be devoted to the hearing of reports and papers, and their consideration, in the following Sections:
> 1. Chemistry and Materia Medica.
> 2. Practical Medicine and Obstetrics.

3. Surgery and Anatomy.
4. Meteorology, Medical Topography, and Epidemic Diseases.
5. Medical Jurisprudence, Hygiene and Physiology.
6. Psychology.

The several sections mentioned above were to be held to a high level of scientific procedure, and no papers or reports were to be issued from the sections except such as might fairly be classed under the following heads:

1st. Such as may contain and establish *positively* new facts, modes of practice, or principles of real value.
2nd. Such as contain the results of well-devised original experimental researches.
3rd. Such as present so complete a review of the facts of any particular subject, as to enable the writer to deduce therefrom legitimate conclusions of importance."

Dr. Hewitt's motion was laid over until the next meeting and finally was not sustained, but the following, introduced by Dr. T. T. Mann, was adopted:

RESOLVED, That a committee of five be appointed to report at the annual meeting of 1874, upon the influences which the external aspects of nature exert upon the imagination and understanding of man; and to what extent the physical organization is changed or modified by such influences.

The Committee on Medical Education made a somewhat lengthy report, but this will doubtless be covered in the Division of Medical Education.

A single sentence from the report of the Committee on Medical Jurisprudence shows that evils now complained of were well recognized in 1872: "The moral, intellectual and professional status of medical experts should be elevated."

The transactions for this meeting close with a copy of a proposed Act to establish a State Board of Health, and an Act to promote the Science of Medicine and Surgery in the State of Minnesota (the so-called Anatomical Act).

The Northwestern Medical and Surgical Journal,* a very short time later, announces the passage of the Anatomy Bill, legalizing dissection in Minnesota, and also the passage of the State Board of Health Bill. The Anatomy Bill passed the Senate by a vote of twenty-seven yeas to three nays, and the House by a vote of sixty-eight yeas to five nays. Dr. Stone gives special credit to Hon. D. M. Sabin of Stillwater for the successful passage of the bill.

The State Board of Health Bill also passed on March 4, 1872, after a severe and prolonged struggle and an apparent defeat, it being saved only by the action of the Committee, in whose hands it had been placed, cutting down the appropriation to five hundred dollars. Again it nearly met defeat at the hands of the Governor and Dr. Stewart is given credit by Dr. Stone, for its salvation.

The Board of Health Bill called for seven members, of whom five were appointed at the time—Drs. D. W. Hand, N. B. Hill, A. B. Stuart, C. N. Hewitt, and A. W. Daniels. Drs. Vespasian Smith, of Duluth, and G. D. Winch, of Blue Earth City, were added under announcement of June 11, 1872. The first meeting of the Board was held in the office of Dr. Hand, March 26, 1872. According to Dr. Hand, this was the third Board of Health to be established in the United States, Massachusetts having preceded us five years, and California two years. The Board organized by electing Dr. A. B. Stuart of Winona as president, and Dr. C. N. Hewitt of Red Wing as secretary, selections which could hardly have been better made in Minnesota at that time. Dr. Hewitt, in particular, had already met with national recognition in public health work.

Dr. Hewitt continued as secretary of the Board until 1897, a period of twenty-five years and during this time his work met the highest approval, both at home

*N. W. Med. and Surg. Jour., Vol. II, p. 384, Feb. and March, 1872.

and abroad. His first year's meager salary was $200; for the following year it was $500, and was gradually increased to $2,500 in the year 1893. On January 11, 1897, Dr. Hewitt learned that he had not been reappointed to office. For this act there has been no official explanation though Dr. Folwell suggests that the probable explanation can be found in the Folwell papers. In his reports for 1895-1896 (p. 14), Dr. Hewitt wrote as follows: "The best of my life and effort have gone into this work. I have spared neither time, labor nor thought to make it what it ought to be. Such as it is, the record is made and closed."

The *Northwestern Lancet** contains an editorial on the failure of the Governor to reappoint Dr. C. N. Hewitt to the State Board of Health. As the *Lancet* puts it:

> This has called forth a loud and indignant protest from the medical profession of the whole state, a protest to which has been joined the voice of those members of the laity who have been in a position to know of the excellence of Dr. Hewitt's work for the maintenance of the public health, and the unlikelihood that it will be possible to find another man for the position who will be as faithful, as industrious and as successful in the work as he. Twenty-five years ago, when Dr. Hewitt took office, in connection with the public health service, the science of preventive medicine as applied to communities was in its infancy. Except in the case of smallpox there was practically no such thing as quarantine against contagious disease, outside of that maintained at ports of entry against vessels from places where yellow fever or cholera existed. In Minnesota, attempts to control outbreaks of epidemic diseases had rarely been made, and had been feebly executed. The extent of territory to be covered was so vast, and in many parts so thinly settled, as to discourage the thought of providing it with efficient health service. Yet this was the very task which Dr. Hewitt undertook, and carried through so successfully that Minnesota is known more or less as a model state in this respect.

The Legislature of 1872, besides what appears already on the record, passed Acts to punish abortionists and attempts to procure abortion; an Act to require all incorporated villages, cities and towns to establish a local board of health; an Act to appropriate $100,000 to complete the Minnesota Hospital for the Insane; and an Act allowing a physician, called to make a professional postmortem examination, $6.00 a day and 10 cents per mile for mileage.

### Fourth Semi-Annual Meeting

The fourth semi-annual meeting of the Minnesota State Medical Society was held at Rochester, June 11 and 12, 1872, with Dr. W. W. Mayo in the chair, and thirty members present. The minutes of the meeting are rather limited, though the *Northwestern Medical and Surgical Journal* describes it as one of the most pleasant meetings of the Society on record. It is stated that "harmony and good feeling prevailed; none of the much-vexed questions of ethics arose."

The *Northwestern Medical and Surgical Journal* for December, 1872,† contains a review of Dr. Hewitt's report to the American Medical Association on the "Climatology and Epidemics of Minnesota." As Dr. Hewitt was secretary of the Minnesota State Board of Health, and as he had written extensively on the relation of the climate of Minnesota to disease, it may not be out of place to quote here the review as given in the *Journal:*

> "The epidemic fevers, enteric, entero-malarial, intermittent and remittent, and cerebro-spinal meningitis, are shown to be present here, although not violent or extensively prevalent; and under the heading of 'Diseases of the Respiratory Tract,' the effect of this climate on catarrh, bronchitis, and phthisis is ably discussed.
>
> "It seems to be pretty generally acknowledged that we do have a large amount of nasal catarrh in this state, which generally follows an attack of influenza; yet so many of the

*N. W. Lancet, Vol. 17, p. 31, Jan. 15, 1897.
†N. W. Med. and Surg. Jour., Vol. III, No. 6, p. 245, (Dec.) 1872.

invalids coming here from other parts of the country are found to have had chronic catarrh for years past, we incline to believe the disease is by no means peculiar to Minnesota. The benefits derived from a residence here by persons of a strumous diathesis are not overstated, and a timely warning is given that patients with well developed phthisis cannot expect relief."

### Fifth Annual Meeting

The fifth annual meeting of the Minnesota State Medical Society was held in Saint Paul, February 4 and 5, 1873. Dr. W. W. Mayo presided.

An interesting item in the treasurer's report shows that the prize fund, though subject to call at any time, was invested at 12 per cent.

Dr. Staples of Winona was awarded the prize for his essay on Catarrhal Inflammation as an Element in Uterine Disease, and Dr. H. C. Hand of Saint Paul was prize winner with an essay on "Phthisis Pulmonalis." Competition was easy, however, since in each instance but one essay was forthcoming. The illustrations accompanying Dr. Staples' article are the first observed in the transactions up to this date.

Dr. Hewitt's proposed amendment to the By-Laws in reference to the formation of sections in the Society was laid on the table.

The report of the Committee on Practical Medicine for this session is made up of a study of Epidemic Cerebro-Spinal Meningitis. The report is written by Dr. Albert E. Senkler, Saint Cloud, who later moved to Toronto, Canada, and still later returned to Saint Paul, but the article is based on the experience of eight members of the profession who sent in data, in addition to Senkler's personal experience. As was true in other epidemics, Dr. Sweney's experience is widely quoted.

Ten new members were admitted to the Society, all nominated except Miss H. E. Preston. The objection to admitting women was paramount but the reason alleged for rejecting her application was because the Woman's Medical College, of which she was a graduate, had not yet been recognized by the American Medical Association.

The Committees on Obstetrics, Gynecology, Materia Medica and Ophthalmology presented no reports.

Dr. N. B. Hill of Minneapolis was elected president for the ensuing year.

The special committee appointed on revision of the Constitution and By-Laws submitted a report, which was laid on the table until the next meeting.

The committee made extensive revisions and urged that such a change be made in the By-Laws that all ethical questions be referred to a judicial council, and, as far as possible, be kept out of the public meetings, and after lengthy discussion these resolutions were adopted.

*(To be continued in May issue.)*

# President's Letter

## REDUCING DEATHS FROM CANCER

I

WE TURN aside from the war this month to a consideration of the ancient and honorable campaign against cancer. With over 150,000 deaths a year from cancer, nothing can be more important. It is well to consider what is being accomplished by lay organizations and by the medical profession. The American Society for the Control of Cancer and the Woman's Field Army are doing excellent work, especially in Minnesota, and deserve all the coöperation the Minnesota State Medical Association can give. Dr. M. W. Alberts, Chairman of our Committee on Cancer, has been very active and interested in this respect. It is suggested that the Woman's Auxiliary of our state association could very well coöperate more actively with this organization. Other lay organizations and also insurance companies have assisted in education of the public concerning symptoms. So thoroughly has information been disseminated that some physicians have feared the increase of cancerphobia but I suspect that those who develop cancerphobia would have some type of "phobia" in any circumstances. Abnormal fear is a psychotic phenomenon.

What is the State Medical Association doing and what is the physician's responsibility? The Medical Association through its committee on Public Health Education, its radio talks and press releases is assisting very effectually in education of the public. The University at its Continuation Center and the State Association by its packet of the month are giving postgraduate instruction in early diagnosis and treatment. But in the last analysis an improvement in the situation is the responsibility of each attending physician and each patient. The physician must "keep up" with the education of the public and the patient must accept the physician's advice. When a patient presents himself for examination he deserves a conscientious study of the case and not a pat on the back. Reiteration of the instances of cancer of the rectum which have been operated upon for hemorrhoids has led to a very marked improvement in early diagnosis of cancer of the rectum. The general use of x-ray and lately of gastroscopy has improved statistics on the diagnosis of cancer of the stomach. The situation with respect to cancer of the breast is not so favorable. There is a general tendency to observe tumors of the breast —and the patient may not return at the appointed time for observation. Definite nodules and discrete areas of mastitis are easily removed for microscopic examination and should not be "observed." Diffuse involvement of the breast during lactation should not be confused with "caked" breast. The physician should not hesitate to have early consultation in a situation so important. Consultation is as necessary for tumors of the breast as for tumors elsewhere. Their very accessibility is apt to lead to fatal procrastination. Approved cancer clinics are essential and fortunately are available in this state. If each of us will assume his responsibility with respect to cancer of the breast, real progress will have been made in early diagnosis and cure. Prevention of cancer must await further research.

II

I would like to call attention to the free home for people suffering from incurable cancer recently opened in Saint Paul—Our Lady of Good Counsel Free Cancer Home. Details are given on page 218 of the March, 1942, issue of MINNESOTA MEDICINE.

H. Z. Giffin

President, Minnesota State Medical Association

# EDITORIAL


## MINNESOTA MEDICINE

OFFICIAL JOURNAL OF THE MINNESOTA STATE MEDICAL ASSOCIATION

Published by the Association under the direction of its Editing and Publishing Committee



EDITING AND PUBLISHING COMMITTEE

PHILIP F. DONOHUE, Saint Paul — THOMAS G. CLEMENT, Duluth
E. M. HAMMES, Saint Paul — O. W. ROWE, Duluth
H. W. MEVERDING, Rochester — T. A. PEPPARD, Minneapolis
WALTMAN WALTERS, Rochester — HENRY L. ULRICH, Minneapolis
B. O. MORK, JR., Worthington — C. L. OPPEGAARD, Crookston

EDITORIAL STAFF

CARL B. DRAKE, Saint Paul, Editor
GEORGE EARL, Associate Editor
HENRY L. ULRICH, Minneapolis, Associate Editor



Annual Subscription—$3.00 Single Copies—$0.40
Foreign and Canadian Subscriptions—$3.50



The right is reserved to reject material submitted for editorial or advertising columns. The Editing and Publishing Committee does not hold itself responsible for views expressed either in editorials or other articles when signed by the author.

Classified advertising—five cents a word; minimum charge, $1.00. Remittance should accompnay order.

Display advertising rates on request.



Address all communications to Minnesota Medicine, 2642 University Avenue, Saint Paul, or National Bldg., Minneapolis. Telephone Nestor 2641.

BUSINESS MANAGER
J. R. BRUCE

Volume 25 APRIL, 1942 Number 4


## THE DOCTORS AND THE AMERICAN RED CROSS

THE communication in this issue from Dr. John S. Lundy, chairman of the First Aid Red Cross Committee for the State Association, should be read and the purposes carried out by all in a position to serve in our civil defense program. The item of standardization is given first emphasis: everything in the First Aid Red Cross manual may not exactly express what each one teaching a group would like to express. However, there is not time to depart from a general method which has already proven its worth.

The physicians in each community must not lose the opportunity to hold to their time honored position in the field of direction of matters primarily medical. We shall need all possible salvage (and there is always considerable) from this war period and effort. There is a large group of women ready and eager, searching for outlets for their skills in the routine of Red Cross. Then if fate visits upon us actual local bombing and devastation the field work will call for more than patriotic display: actual detailed training and experience will be indispensable. As for the lady who came into a Red Cross group and said, "Assign me some important assignment; no puttering and fussy detail," even she has a place, if someone can help her find it.

E.L.T.

## CIVILIAN DEFENSE IN MINNESOTA

A COUNTRY at war today requires, in addition to its armed forces, provision for civilian defense. Although the interior of the country is not so likely to suffer from bombing and sabotage of industrial plants, means of transportation and communication are an ever-present hazard. For this reason organization for increasing the protection of the state by the addition of volunteer fire fighters and police, and the provision for greatly augmented emergency medical aid in the event of unusual disasters is vital. The medical profession has of necessity an important part to play in this part of the program.

In providing for the medical part of civilian defense in the state, the Governor appointed Dr. A. J. Chesley, secretary of the State Board of Health, to organize this phase of defense. Dr. Chesley has called in the state associations of physicians, dentists, pharmacists, veterinarians, nurses and hospitals for their coöperation, and he has appointed health officers throughout the state to coördinate the local organizations of the above mentioned professions. Committees have been, or are being, appointed by the local professional societies to provide for medical care in case of need.

The needs for civilian defense differ in our state from those in the sea border states. The

Governor has wisely adopted only regulations suited to our location.

The needs in our state are the greatest in the centers of population and industry. The medical phase of civilian defense will assist in providing for first aid units and their transportation to the site of the trouble, and ambulance transportation of victims in case the usual facilities do not suffice. Hospitals are to provide emergency first aid units consisting of two doctors, two nurses and two stretcher bearers, and a car for their transportation, all on call day or night. Such a unit should carry equipment in the form of splints, dressings, et cetera, and the unit should be ready to respond at a minute's notice. The doctors in such a unit need not be trained surgeons, for victims in need of operations will be transported to hospitals for operative care. Provision should be made for sufficient ambulance transportation. The offer of the State Association of Morticians to provide emergency transportation should aid in solving this problem. Doubtless local Red Cross units have station wagons in their motor aid group, which can be easily converted to carry one or two victims on stretchers. In addition to these preparations, plans have been made in the larger cities for first aid centers in outlying districts where supplies will be available day or night for neighborhood doctors and nurses. Certain industrial plants, particularly those on twenty-four hour shifts, and already equipped with a nurse and first aid equipment, constitute desirable first aid centers. We would suggest that physicians on call for such first aid service carry splints and a first aid kit in the trunks of their cars.

The part played by the local hospitals is undoubtedly the back bone of the medical side of civilian defense. It is the part of each hospital to supply the first aid units and to provide for emergency surgical aid in case of need. Each hospital will utilize the service of its medical staff and its nurses and will have available a number of beds in case of emergency.

Associated in the medical part of civilian defense are other groups such as dentists, pharmacists, veterinarians and the State Sanitary Conference. Fully as important as the organization of defense units on paper, is the provision of a mechanism for calling out promptly the individuals and units when needed. In the larger centers there will be a central headquarters established for receiving information and for sending out calls for various defense units.

## PREPAYMENT MEDICAL PLANS

THERE appears elsewhere in this issue a summary of the first meeting held under the auspices of the American Medical Association devoted to the discussion of the various kinds of prepayment medical plans in operation throughout the country. Meeting the cost of illness often is a difficult matter. The medical profession is interested in working out the best methods of financing the various items involved.

Many commodities are today purchased on the monthly installment plan—doctor's services included. No particular mechanism is needed to provide for monthly payments on doctors' bills, although it must be admitted that patients are more likely to pay a loan company regularly than a doctor.

It is, however, the hazard of the costly illness usually requiring hospital and nursing care as well as the services of a physician or surgeon which has prompted so much present-day discussion. Even those on a small income have no real difficulty in paying for an occasional visit from the general practitioner.

Insurance payable in small monthly installments affords an answer to the problem for many and is the basis of most of the organizations in operation. There has been, of necessity, much groping in the dark because of lack of experience and statistics.

Hospital insurance went through the same groping process and is apparently becoming firmly established. It is to be hoped the same will be true of medical insurance, although its problems are more involved. The fact that few like to be patients in a hospital and the provisions made by hospital associations to increase the benefits to members according to experience make it unlikely that much abuse will be made of membership. When it comes to a physician's services experience is less predictable.

Some prepayment medical organizations are confronted with fine legal distinctions. If they pay their own doctors and limit members to the services of designated physicians, they are practicing medicine and it is illegal for a corporation to practice medicine. If they agree to pay doctors' bills and allow free choice of physician their services are in the nature of insurance. Free

choice of physician is apparently the distinguishing feature between legality and illegality. Free choice of physician is what the medical profession has insisted is a requisite for best medical service. Free choice of physician is what some think is not at all necessary for the other fellow, but insist upon for themselves. Fortunately, most Americans value highly this feature of the American way of life.

## AMERICAN COLLEGE OF PHYSICIANS MEETS IN SAINT PAUL

WAR or no war, it was the consensus of opinion of the officers and the Board of Regents of the American College of Physicians that the annual meeting of the College should and would be held in Saint Paul in April. Plans had gathered considerable momentum before Pearl Harbor and the momentum of such a large organization is considerable.

The program has long since been in the hands of its members. Dr. Roger I. Lee of Boston is this year's president and George Morris Piersol of Philadelphia, the secretary-general. The Board of Regents represent the continent from Boston to San Francisco and Montreal to Galveston.

The College meets in Saint Paul from April 20 to 25 on invitation of the Ramsey County Medical Society, backed by the Hennepin, Saint Louis and the Olmsted-Houston-Fillmore-Dodge County Medical Societies, the Minnesota Society of Internal Medicine, the Minnesota State Medical Association, the Medical School of the University of Minnesota, and many individuals in positions official or otherwise. The program speaks for the efficient management of Dr. John A. Lepak, local chairman, supported by the local committees.

Each morning during the session (except Monday) will be devoted to clinics at the Saint Paul hospitals and the University by visitors and local physicians. Panel discussions will occupy each noon hour (except Monday), and will be presided over by Minnesota physicians assisted by visitors. General sessions consisting of addresses by visiting physicians for the most part will occupy each afternoon.

Following the evening scientific program on Monday the annual smoker will be held by the College. The Ramsey County Medical Society will stage a light entertainment on Tuesday evening. The annual convocation, at which the president will give his address and newly elected Fellows will be presented, is to be held Wednesday evening and will be followed by a reception and dance at the Hotel Lowry. The banquet is scheduled for Thursday evening. Dr. Lepak will act as toastmaster and guests will be addressed by Dr. W. A. O'Brien.

Attendance at the sessions is not limited by any means to members of the College. Members of Ramsey and Hennepin County Medical Societies, interns of the various Saint Paul hospitals, medical students at the University of Minnesota and the Mayo Foundation, and members of the Medical Corps of the United States and Canada will be admitted free. Other qualified physicians may attend upon payment of a $12.00 fee (which includes a year's subscription to the *Annals of Internal Medicine*).

Teas, luncheons and other forms of entertainment, in addition to the evening social affairs, will be provided the visiting women.

Mention should be made of the technical exhibits. Effort has been made to limit the exhibits to those of scientific interest in internal medicine, all irrelevant products having been excluded.

While the annual sessions of the College of Physicians might well be of interest to the profession in general, they are held primarily for those interested in internal medicine. The meeting of the College in Saint Paul this month provides a rare opportunity for internists of the North-Central district of our country.

## CONFERENCE ON MEDICAL SERVICE PLANS

The first Conference on Medical Service Plans was held in Chicago on February 14, 1942, at the headquarters of the American Medical Association and the Palmer House. A total of sixty-four persons were present, including representatives from operating and proposed medical service plans in seventeen states and officers of state and county medical societies.

Dr. Olin West, Secretary and General Manager of the American Medical Association, welcomed the representatives and stated: "You are distinctly a part of a great movement that is essential to the welfare of the people of this country and it is highly desirable that you should get together to exchange information and opinions in order to arrive at a basic understanding of the problems involved."

Mr. J. D. Laux of Michigan Medical Service, who was elected Chairman of the Conference, indicated that interest in some form of prepayment for medical services has been moving along three well-defined fronts: (1) group clinic or consumer plans such as the Ross-

Loos Clinic or the Transport Workers Medical Plan, of which there are seventeen such plans in operation with a total enrollment of 100,000 persons; (2) employe-employer mutual benefit associations (300 in operation) and the commercial insurance company plans (at least 250) providing cash indemnity benefits totaling $365,000,000 annually; and (3) non-profit medical service plans sponsored by medical societies, of which there are 33 plans in operation in 9 states with an enrollment in excess of 750,000 persons. The non-profit medical society sponsored programs are developing most rapidly and give the best promise of contributing toward a better distribution of medical service.

The entire day was devoted to consideration of the basic principles and major problems involved in medical service and limited surgical benefit programs sponsored by medical societies. The following are some particularly pertinent points brought out in the discussion:

- Contract practice plans limiting service to a small number of physicians cannot provide a satisfactory service for an entire community. Non-profit community-wide or state-wide service plans are the proper type of organization for prepayment of medical services.

  The statement that voluntary plans lead to compulsory insurance applies to the chaotic situation created by a multiplicity of lay controlled or commercial plans, not to medically sponsored community programs.

- In medical society sponsored programs, the contribution of the profession is the offering of services without additional charge to persons in the under-income group. Under a plan providing cash indemnity, the only thing the medical profession furnishes—service protection to the individual—would be taken away.

- Experiments in the full coverage type of medical service plan are being undertaken to determine the effect of such plans on the private practice of medicine; how such plans affect the physician-patient relationship; what problems arise in connection with the practice of specialists; the difference between urban, rural, and metropolitan practice; and all general problems relating to medical care.

- A differential arrangement for specialists is a problem which one medical service plan treats in the following manner: When a subscriber uses a specialist as his family physician, the specialist receives general practitioner fees for such service. However, in the event the subscriber is referred to a specialist by his family physician for special services, an increased fee is paid. To be eligible for increased fees, the specialist must confine himself strictly to his specialty.

- Enrollment based on individual physical examinations does not furnish as good selection as group enrollment.

- The desirability of establishing somewhat uniform or model legislation for medical service plans was emphasized.

- The question of the extent of joint operations with hospital service plans and the appropriate basis for coöperation led to the establishment of a committee to meet with a committee from the hospital service plans.

- It is of utmost importance to establish a centralized agency for the collection and dissemination of information. R. G. Leland, M.D., Director of the Bureau of Medical Economics of the American Medical Association, outlined a program of coordination through establishment of a glossary of terminology, an organizational outline of the plans, and a composite tabulation of financial and statistical reports.

The Conference concluded with the appointment of a committee to determine the best method of establishment of a permanent organization of medical service plans throughout the country.

# Communication

### Committee on First Aid and Red Cross

The members of the First Aid and Red Cross Committee were unanimous in the belief that, because of the urgency of the present situation, they would follow the standard Red Cross First Aid Textbook in teaching first aid.

It was agreed also that, in order to avoid confusing the students, the book would be followed just as it is, without expression of the instructor's personal disagreement with the text.

The instructor, it is believed, should avoid offense to any social or professional group.

It was suggested that the physician be the executive officer, that he lay the plans and direct the course, that he personally give the primary instruction but that he utilize available persons in conducting the necessary drills.

The medical profession is asked to make first aid training available to the hundreds who will be required to take it and to the thousands who will desire it. Air raid wardens, school bus drivers and victory aides are examples of persons who already are required to take it.

The physician is best qualified of all persons in the community to direct the energies of the host of people who are insistent on giving their help. He need not fear that the entire burden will fall on his own shoulders.

As a corollary of this, the physician may be sure that many organizations, the membership of some of which is composed of women, are eager to support his efforts. As an introduction to utilization of these groups, the physician should urge participation of the Women's Auxiliary to the Minnesota State Medical Association.

Obviously, in the development of the entire program, the prompt support of officers of county and regional medical societies is essential.

(Signed) JOHN S. LUNDY, M.D.

Chairman of the Committee on First Aid and Red Cross of the Minnesota State Medical Association

# MEDICAL ECONOMICS

**Edited by the Committee on Medical Economics**
**of the**
**Minnesota State Medical Association**
**George Earl, M.D., Chairman**

## CORRECTIVE SERVICE TO SELECTEES

Preliminary arrangements for rehabilitation of selectees were already under way in Minnesota as this issue went to press.

Selective Service regulations call for these corrective services to be given by home physicians and dentists of the selectee's own choice. But these physicians and dentists, with the exception of already qualified draft board examiners, must be accepted by the state director of the system before they may participate.

Medical examiners for local draft boards were sent their applications direct by the director of the system because officials in charge regard them as entitled to special consideration in view of their extensive unpaid service with the draft.

To facilitate application on the part of all other qualified practitioners, letters were sent to all members in March, urging them to secure their own application blanks from local draft boards. These blanks were to be filled out and returned as promptly as possible to the draft board to be forwarded to the director of the system in Saint Paul.

The regulations make it clear that this corrective service is not to be thrown wide open for any disability which the selectee may wish to have treated.

*Fees will be paid by the Selective Service System for services previously authorized by the Selective Service authorities, only, and only to practitioners who have applied in the regular manner.*

The procedure for authorizing treatment had not yet been announced as this issue went to press.

## ALREADY AT WORK

Minnesota's committees on Procurement and Assignment of Physicians are already at work reporting on the qualifications and availability of Minnesota physicians for service with the armed forces.

So far, only names of men who expressed themselves on the first Procurement and Assignment questionnaire as willing to serve, have been checked. The main body of the work will come after the new questionnaire from the P and A, due early this month, comes out.

In preparation, lists of all physicians in every district in the state are being sent to committee members. These lists are on prepared blanks, filled out as to age and specialty of the physician. The county committee will then fill out the blank as to the availability for service of the physician, if not for military service, for other necessary public services such as the health service, industry or civilian practice in other communities stripped of physicians. The committee will make its decisions solely on the basis of community need. It is no part of their responsibility to pass upon claims for dependency.

### Community Need Is Crux

If a community is already served by a sufficient number of physicians not qualified for combat service, even if it means a greater demand on their services, then the committee will mark the younger man in question as available for military duty. If a community can spare the services of an older man or a man obviously incapacitated for military service, the committee will mark him available for nonmilitary duty, that is, for medical practice in a community stripped of medical services, or in industry or in the public health service.

These lists of names went out to county committees before the first of April and are now being completed, according to local information, by the committees. They will be forwarded to the state committee and will be at hand for immediate reference as names are sent to Minnesota for checking from the Procurement and Assignment Service in Washington.

**Begins With Physician**

It is the hope and plan of all the combat agencies and the Procurement and Assignment Service that future military needs may be met under this system. The plan depends upon the willingness of physicians to serve wherever they can best serve, at home or in the armed forces, as expressed on the questionnaire which will reach them all within a short period. With the information on the questionnaire at hand and the supplementary advice of state and county committees, all physicians will be selected for the services which need them without stripping civilian communities or civilian needs. All physicians called in the draft will be referred to the Procurement and Assignment Service and will be permitted to apply for commission, if they are found to be available.

As emphasized repeatedly before, the Procurement and Assignment Service has no jurisdiction over members of the Reserve Corps.

**Lapel Button**

All who fill out and return their Procurement and Assignment questionnaires, however, will rate a signed certificate and a lapel button which will indicate that they have offered themselves for whatever service they can best give to the war. If they remain at home, under those circumstances, it is because impartial judges have decreed that they are needed at home—not because they have dodged their duty to their country.

---

## TAX MEASURE OR SOCIAL PLANNING?

Which came first, "the chicken or the egg"?

American Hospital Association executives and "Blue Cross" directors posed the old question at a meeting in New York, recently, with reference to proposed increases in Social Security taxes. What prompted the new proposals? Was it the long-considered plan for extending social security to hospital service, or was it actually the need for new revenue to be derived by two billion dollars in payroll taxes which such an extension would provide?

If the proposal is actually another measure for revenue, then it should certainly be debated solely on grounds of its expediency as a tax-raising measure and rejected on those grounds. It is obviously indefensible to raise war funds by measures which, once written into the law, cannot be repealed when the war is over without dislocating and endangering our whole Social Security system.

If the proposal is an honest piece of social legislation proposed as part of an expanding program of social planners in Washington, then it needs more study and debate than can be given it in a war crisis. It should wait until the crisis subsides and Congress can be reasonably certain of what lies ahead for Americans.

**Would End "Blue Cross"**

It is more than likely that the plan to provide $3.00 daily for hospitalization out of Social Security funds—in exchange for doubling the current payroll tax—would eventually alter America's unique and efficient voluntary hospital system. It is certain that it would end the most extensive and promising privately promoted social experiment of these times, the "Blue Cross" hospital service system. This system now serves thousands of Americans well and it is being extended rapidly.

**Difference Is Fundamental**

Said Dr. S. S. Goldwater, head of the Associated Hospital Service in New York, at this meeting:

"I don't want to oppose something constructive that the Government wants to do; but I do want the Government to keep its hands off something constructive that we are doing. The motives of the President as expressed in his recommendations in January regarding increased benefits for contributors to the Social Security program are undoubtedly honorable and should not be opposed on that ground but rather on the ground that, in so far as we can see, they are being converted into bad methods. What the President says he wants to do is what we want to do. There is, however, a fundamental difference in method. . . .

"Local organization and control will produce the best results in hospitalization and any Federal approach to interference with the fiscal affairs of hospitals leading eventually to control by a central Government bureau would be a tragic affair for the people of this country. There is justification for the interest of a humane government in the question of whether hospital service has been made available on suitable terms to a great mass of the people; but this inquiry should also take into account the fact that voluntary, locally directed hospital service plans have made Government intervention unnecessary.

### Local Failure Not Tragic

"Exaggerated statements have been made in Washington and elsewhere as to the lack of hospital care. There may be some communities where adequate hospital facilities are lacking or where good hospital service is difficult to obtain. But these are very few in this country. . . .

"Assumptions that we must do as other countries have done regardless of our achievements are certainly not justified, especially in a country where freedom is valued and where the principle of local self-government is supposed to be sacred. . . .

"Moreover failure in a locality, if it occurs, is not the tragic thing that country-wide failure would be. Hospitals must be left free to take such action as their communities require without having to wait for approval from Washington based upon imperfect knowledge of local conditions.

"My own experience in New York showed me how far short Government hospitals can fall from the perfection which has been attributed to them. Perfect conditions do not exist anywhere and even in New York, where I worked as head of the city's hospitals—and I worked under conditions as favorable as can be expected of government—the story has not yet been told of impediments placed by government circumlocution in the way of anybody attempting to administer a large group of hospitals from a central office. The system as a whole failed to accomplish what I had in mind for the city because of the onerous conditions under which government work of all sorts had to be done. It could hardly be otherwise if the Federal government attempted to exercise any measure of control over voluntary hospitals, as it inevitably would do sooner or later under plans proposed by the Social Security board.

### Can Fit All Needs

"The fact is that we have in the voluntary nonprofit hospital field a positive plan for the pre-payment of hospital bills by the public which has, in a few short years, demonstrated its capacity to serve and the eagerness of the public to take advantage of it. If the government will keep its hands off we will be able to develop plans hereafter that will fit the needs of all groups in the population, down to those of the lowest incomes, with local supervision and control and with local responsibility. We are asking the Government to stand by and give us its blessing to encourage us in the work we are seeking to do rather than to hamper us by ill advised interference, however well meaning, which offers a serious threat to the voluntary hospitals system and to free medicine. . . ."

The March issue of *Hospital Management* reports a total of seventy-one approved "Blue Cross" hospital service plans in the United States, representing twenty-nine states and two provinces.

## THE COUNCIL MEETS

### Defense

Health aspects of Civilian Defense have not yet been worked out in detail, Dr. A. J. Chesley, secretary of the State Board of Health, reported to the Council at the February meeting. It was decided, however, that members of the Council would act as advisers in these matters in their districts. They will meet with chairmen of city and county Defense Councils and with local health officers to develop and coördinate local plans.

### Dues

The question of refunding dues of members in active military duty was thoroughly discussed at the request of one large society at this meeting. All Council members felt that the work of medical organizations at home is too important to permit such refunds.

It was pointed out that a large number of societies are now assessing their own members to cover local and state dues of colleagues who go into service. Furthermore, the House of Delegates ruled in 1940 that only officers under the grade of captain who are in need of assistance should be excused from paying dues—and then only with approval of the Council.

### Fifty Years

A new honorary organization, the "Fifty Club," was established by the Council at this meeting. It will be made up of members who have practiced medicine for fifty years or more. All will receive a lapel button engraved with the name of the association and the numeral fifty at the first presentation ceremony to be held in connection with the 89th annual meeting in Duluth. The presentation will be a regular feature of the meeting each year, thereafter, and special invitations will be issued to all who are able to attend. Those who are not able to attend will receive their awards at home.

Preliminary counts showed a considerable number of physicians, some of them still in active practice, who are eligible for "Fifty" awards in Minnesota.

### Insurance Studies

Two sub-committees of the Committee on Sickness Insurance will study sickness insurance

plans all over the country this year with a view to the possibility of drawing up a workable plan for Minnesota, it was decided at this meeting. One of these committees will investigate enabling acts passed in other states, an essential first step to any non-profit insurance plan. The other will review actual provisions of existing medical service plans with a view to sifting them for Minnesota requirements. A report on both studies will be submitted to the House of Delegates in June.

### County Added

Beltrami county was selected, with the approval of the Council, for a third experiment in medical service for Farm Security clients in Minnesota. The first two, in Morrison and Ottertail counties, are now five months old and preliminary reports from the FSA and the physicians involved are not unfavorable. Both admit, however, that insufficient time has elapsed as yet to judge of the ultimate success in either locality. Dr. Richard F. Boyd of Milwaukee, regional medical director of the FSA, presented the matter to the Council and expressed the appreciation of the government for the coöperation of physicians in both counties.

### Nurses' Training

A joint committee of nine, representing the medical and hospital associations and the State Board of Nurses Examiners, will study problems of nurses training as they effect especially the rural hospital. The plan, drawn up by the Committee on Interprofessional Relations, was approved by the Council at this meeting. The new committee will act as a liaison body before which all the interests concerned, including the public, the hospital, physicians and nurses, will be aired and thoroughly discussed. Training regulations which will protect nursing standards and still not deprive smaller hospitals of well-trained nurses will be the objective of the committee. Drs. F. J. Savage, Saint Paul, C. M. Johnson, Dawson, and P. F. Meyer, Faribault, were appointed medical representatives to this committee.

## MINNESOTA STATE BOARD OF MEDICAL EXAMINERS

### Julian F. Du Bois, M.D., Secretary

#### St. Paul Abortionist Loses Appeal in Supreme Court

Re: State of Minnesota vs. Georgiann Tennyson, also known as Ann Tennyson.

On March 6, 1942, Mrs. Georgiann Tennyson, fifty-three years of age, lost her appeal from a conviction for criminal abortion, in the Supreme Court of Minnesota. The decision of the Supreme Court was unanimous. Mrs. Tennyson, who resided at 1719 Ross St., Saint Paul, was convicted by a jury in the District Court of Ramsey County, on May 23, 1941, and was sentenced by the Honorable Hugo O. Hanft, Judge of the District Court, to a term of not less than two and not more than eight years at hard labor in the Woman's Reformatory at Shakopee. Mrs. Tennyson's sentence was doubled due to the fact that in 1928, she had a previous conviction for criminal abortion. At that time, she was known as Ann Herbert. Mrs. Tennyson was taken to Shakopee on March 6, 1942, to commence serving her sentence.

In the present case the Supreme Court of Minnesota made a very careful review of the laws of this State concerning the crime of abortion and previous decisions of the Supreme Court. The opinion written by the Honorable Harry H. Peterson, Associate Justice of the Supreme Court, held that there was no merit in Mrs. Tennyson's contention that the girl upon whom the abortion was performed was an accomplice and, therefore, Mrs. Tennyson could not be convicted unless the girl's testimony was corroborated. The Supreme Court of Minnesota definitely stated that

> "A woman upon whom an abortion is performed or attempted is not an accomplice in the commission of the offense."

The Supreme Court also held that it was not prejudicial for the trial court to have permitted a physician to testify on behalf of the State

> "that the administration of the jelly substance in question to produce an abortion was dangerous to the life of the woman. We cannot perceive that any possible prejudice could have resulted. It is impossibe to believe that any juror of ordinary intelligence would not know, without being told so by a doctor, that an attempt to produce an abortion by the administration of any medicine or substance or the insertion of an instrument into the uterus would be dangerous."

Mrs. Tennyson is an old offender in the abortion racket and deserves little consideration. There is no excuse whatever for Mrs. Tennyson's having been engaged in such illegal activities. Her husband has been employed for some time by the City of Saint Paul as a fireman. The Supreme Court's decision culminates a long fight waged by the Saint Paul Police Department, the State Board of Medical Examiners and the Ramsey County Attorney's office to put Mrs. Tennyson out of circulation. The case was diligently prosecuted by Mr. James F. Lynch, County Attorney of Ramsey County, and is another example of the splendid cooperation given by Mr. Lynch's office in the prosecution of those who violate the medical laws of the State of Minnesota.

---

#### Duluth Woman Sentenced to Four-Year Term for Abortion

Re: State of Minnesota vs. Millie Meyer.

On February 11, 1942, Millie Meyer, forty-nine years of age, was sentenced to a term of not to exceed four years at hard labor in the Women's Reformatory at Shakopee, Minnesota. The sentence was imposed by

the Honorable C. R. Magney, Judge of the District Court, following the defendant's conviction by a jury of the crime of abortion.

Mrs. Meyer, who resided at 108 No. 58th Ave. West, Duluth, was arrested on January 15, 1942, by members of the Duluth Police Department, when it was learned that a twenty-five-year-old Duluth girl had an appointment with Mrs. Meyer for the purpose of having an abortion performed. On January 16, R. E. Donaldson, Chief of Detectives of the Duluth Police Department, filed a complaint against Mrs. Meyer charging her with the crime of abortion. Mrs. Meyer demanded a preliminary hearing which was had on January 22, 1942, in the Municipal Court of Duluth. Following the hearing, she was held to the District Court for trial. The trial commenced on February 3, and ended on February 5, with the jury deliberating only two hours and returning a verdict of guilty.

This conviction marks the third successful prosecution, during the past year against abortionists in Duluth. It demonstrates the splendid work being done by the Duluth Police Department under Chief Elmer Stovern and Chief of Detectives R. E. Donaldson, and the County Attorney's office of St. Louis County. The case was tried for the State by Mr. Walter F. Dacey, assistant to Mr. Thomas J. Naylor, County Attorney.

## MINNESOTA STATE BOARD OF MEDICAL EXAMINERS

### Physicians Licensed February 13, 1942

*By Examination*

Charles Douglas Adkins, U. of Minn., M.B. 1941, Minneapolis General Hospital, Minneapolis, Minn.

Eugene Edward Ahern, U. of Minn., M.B. 1939; M.D. 1940, University Hospital, Minneapolis, Minn.

Ralph Sharples Armstrong, U. of Minn., M.B. 1940, University Hospital, Oklahoma City, Okla.

John Konvalinka Bennett, McGill Univ., M.D. 1940, Mayo Clinic, Rochester, Minn.

Manuel Robert Binder, U. of Minn., M.B. 1941, Minneapolis General Hospital, Minneapolis, Minn.

Stanley Porter Bradshaw, Stanford U., M.D. 1941, Mayo Clinic, Rochester, Minn.

George Frederic Emerson, U. of Rochester, M.D. 1938, Mayo Clinic, Rochester, Minn.

William Oscar Finkelnburg, U. of Minn., M.B. 1941, Ancker Hospital, Saint Paul, Minn.

Richard Aldrich Forney, Rush Med. Co., M.D. 1939, Mayo Clinic, Rochester, Minn.

Thomas Newton Foster, Stanford U., M.D. 1939, Mayo Clinic, Rochester, Minn.

Charles Doney Freeman, Jr., U. of Minn., M.B. 1941, Ancker Hospital, Saint Paul, Minn.

Robert Prentice Glover, U. of Pa., M.D. 1939, Mayo Clinic, Rochester, Minn.

Melvin Thomas Gorsuch, Cincinnati Med. Col., M.B. 1940; M.D. 1941, Mayo Clinic, Rochester, Minn.

Dexter E. Guernsey, U. of Minn., M.B. 1940, M.D. 1941, Mayo Clinic, Rochester, Minn.

William Henry Guthrie, Kansas U., M.D. 1940, Graceville, Minn.

Harvey Allan Hatch, Johns Hopkins U., M.D. 1940, University Hospital, Minneapolis, Minn.

Guy Schrag Haywood, Northwestern U., M.B. 1940, M.D. 1941, Mayo Clinic, Rochester, Minn.

Huldrick Kammer, Northwestern U., M.B. 1940; M.D. 1941, Ancker Hospital, Saint Paul, Minn.

John Patrick Kelly, U. of Minn., M.B. 1941, St. Mary's Hospital, Duluth, Minn.

Henry Alexander Korda, U. of Minn., M.B. 1941, Miller Hospital, Saint Paul, Minn.

Henry Ranney Large, Western Reserve, M.D. 1938, Mayo Clinic, Rochester, Minn.

Roger Adolph Larson, U. of Minn., M.B. 1940, Minneapolis General Hospital, Minneapolis, Minn.

C. Walton Lillehei, U. of Minn., M.B. 1941, Minneapolis General Hospital, Minneapolis, Minn.

Sidney Samuel Litow, U. of Ill., M.B. 1940; M.D. 1941, Minneapolis General Hospital, Minneapolis, Minn.

Miriam Hinsdale Mellon, U. of Rochester, M.D. 1939, 6055 Bunkerhill Road, Pittsburgh, Pa.

Alvin Aurelius Merendino, Yale Univ., M.D. 1940, University Hospital, Minneapolis, Minn.

Thomas Walker O'Kane, U. of Ill., M.D. 1941, Midway Hospital, Saint Paul, Minn.

Albert John Ochsner, II, Med. Co. of Va., M.D. 1940, Mayo Clinic, Rochester, Minn.

Donald Joseph Pearson, Ohio State U., M.D. 1940, Mayo Clinic, Rochester, Minn.

Kenneth Adolph Peterson, U. of Minn., M.B. 1941, Minneapolis General Hospital, Minneapolis, Minn.

Paul George Polski, U. of Minn., M.B. 1940; M.D. 1941, Kings County Hospital, Brooklyn, N. Y.

Robert Thomas Rowland, U. of Minn., M.B. 1941, Ancker Hospital, Saint Paul, Minn.

Elbert Theodore Rulison, Harvard U., M.D. 1939, Mayo Clinic, Rochester, Minn.

Verne Andreas Schulberg, U. of Minn., M.B. 1941, St. Joseph's Hospital, Saint Paul, Minn.

Howard Stanley Selvig, U. of Minn., M.B. 1941, Minneapolis General Hospital, Minneapolis, Minn.

Harley Meredith Sigmond, U. of Minn., M.B. 1940, Abbott Hospital, Minneapolis, Minn.

Fred Newman Sparling, U. of Manitoba, M.D. 1940, Mayo Clinic, Rochester, Minn.

Edward Francis Walsh, U. of Minn., M.B. 1941, Ancker Hospital, Saint Paul, Minn.

William E. Wellman, U. of Minn., M.B. 1940; M.D. 1941, Lake City, Minn.

Samuel Maudin Wells, Harvard U., M.D. 1940, University Hospital, Minneapolis, Minn.

George Theodore Wilson, U. of Minn., M.B. 1941, 1900 Delaware Ave., Saint Paul, Minn.

Kenneth George Wilson, U. of Minn., M.B. 1940; M.D. 1941, Mayo Clinic, Rochester, Minn.

*By Reciprocity*

Arthur Cullen Burt, U. of Chicago, M.D. 1935, 1201 14th Ave. N., Fargo, N. D.

S. Sverre Houkom, U. of Minn., M.B. 1932; M.D. 1934, Duluth Clinic, Duluth, Minn.

Charles Michael Jessico, Loyola U., M.D. 1936, Duluth Clinic, Duluth, Minn.

Gordon Mather Martin, U. of Neb., M.D. 1940, Mayo Clinic, Rochester, Minn.

Edward Stewart Taylor, U. of Iowa, M.D. 1936, Worthington Clinic, Worthington, Minn.

*National Board Credentials*

John Hyslop Flinn, Northwestern U., M.B. 1940; M.D. 1941, Mayo Clinic, Rochester, Minn.

# INDUSTRIAL HEALTH

**Edited by the Committee on Industrial Health and Occupational Diseases**

**J. L. McLeod, Grand Rapids, Chairman**

H. B. Allen, Austin
L. S. Arling, Minneapolis
G. L. Berdez, Duluth
T. G. Clement, Duluth
W. S. Lemon, Rochester
T. A. Lowe, South Saint Paul
R. I. Rizer, Minneapolis
S. E. Sweitzer, Minneapolis
O. H. Wangensteen, Minneapolis
A. E. Wilcox, Minneapolis

## CONSERVATION OF MAN POWER

Every industry in this state, whether concerned entirely with defense work, or completely of a private nature, has, since "Jap Sunday," increased its tempo to a tremendous pitch. This increase has imposed a great strain on all the components of production, including the machines of flesh, as well as the machines of steel.

Mechanical engineers, plant managers, and machinists can glibly quote the stress, strain, hours of production, etc., each machine of steel is capable of withstanding in producing its maximum efficient output. How meager, in comparison, are the facts in regard to the machines of flesh which are the most important cogs in our "all-out" war of production.

Out of World War I medical men in all fields from Psychiatry to Roentgenology, and Surgery to Dermatology, gleaned valuable statistics and information which aided the progress of Medicine immeasurably. In World War II, when for every man on the battlefield, it has been variously estimated twelve to sixteen men are necessary in industry, the opportunities for Industrial Physicians, and Surgeons, to correlate all facts of fatigue, efficiency, and nutrition, as well as the effects of rest periods, general health measures, and planned feedings on the human machine, should be collected and utilized to the fullest extent.

### Medical Profession Responsible

The conservation of man power resolves itself around the education of Industrial Physicians and Surgeons, as well as all Physicians in any way connected with the health and welfare of workers, education of plant owners and operators, and health education of the great masses of workers. The responsibility for this tremendous task rests squarely on the shoulders of the medical profession as a whole, but more surely so on the increasing corps of Industrial Physicians and Surgeons.

To quote from a recent editorial in the *Journal of American Medical Association*, "Neither employes nor physicians yet fully comprehend how vast a contribution could be made to the war effort by a well-organized health program. A reduction of only ten per cent in the four hundred million man days now lost annually due to illness and injury would produce, if applied to these various tasks, five capital ships, sixteen thousand tanks or nine thousand bombers.

### Worker Most Valuable Machine

With the challenge clear what can we as Physicians do to conserve this vital factor in Victory, Man Power? First, I believe an organized, as well as individual, effort should be made to bring to the attention of the Manufacturers, the necessity of recognizing the fact that their most valuable production unit is the individual worker and not the steel machines. Acquaint them with the facts available in regard to the maintenance of the general health and efficiency of their employes. Warn them against the exploitation of health and efficiency by too much "over time" and constant days of work, with no periods of rest or relaxation. The experience of British Industry, that more than fifty-six to sixty hours per week of work for men, and forty-eight hours of work per week for women leads to increased illness, absenteeism and increasing accidents should be quoted in support of these contentions. Secondly, the workers themselves should be acquainted with measures of health promotion and sickness prevention by various educational means. No one method will reach all workers so poster campaigns, personal interviews, group health conferences and classes, motion pictures, payroll inserts, etc., should all be utilized. Repetition in all forms is necessary to keep impressing the worker of his duty in maintaining his health and efficiency, to contribute his best at all times, but particularly now, in this war for Victory. Stress keeping fit, rather than medical treatments and diseases and always employ the simplest of lay terminology. The Bureau of Health Education of the American Medical Association has many pamphlets available that can be readily obtained to assist in this form of education.

Lastly the medical profession as a whole must keep abreast with the many phases of Industrial Health as applied to the maintenance of the health and efficiency of all workers whether treated individually, as private patients, or in groups. Answers to any specific questions can always be obtained through your Minnesota State Medical Industrial Health Committee which is only too eager to assist physicians in maintaining their part of this tremendous responsibility.

EUGENE E. SCOTT, M.D.

**Meeting of February 11, 1942**

The regular monthly meeting of the Minnesota Academy of Medicine was held at the Town & Country Club on Wednesday evening, February 11, 1942. Dinner was served at 7 o'clock and the meeting was called to order at 8:10 p.m. by the president, Dr. Martin Nordland.

There were forty-nine members and one guest present.

Minutes of the January meeting were read and approved.

The Secretary read a letter from Dr. J. F. Corbett expressing his appreciation of the Academy's action in having Dr. Corbett's name transferred to the Honorary Membership list.

The scientific program followed.

Dr. Walter E. Camp gave the following paper with two case reports, illustrated by numerous lantern slides.

## MALIGNANT EXOPHTHALMOS FOLLOWING THYROIDECTOMY IN GRAVES' DISEASE

By Walter E. Camp, M.D.
*Minneapolis, Minnesota*

Exophthalmos, or proptosis of the eyeball, is only one of a number of disturbances which affect the eye and orbital contents in Graves' disease, or thyrotoxicosis. Plummer and Wilder in 1934, reporting on 2000 cases of exophthalmic goiter, found exophthalmos present in 55 per cent. Other investigators have reported exophthalmos to be present in from 35 to 75 per cent. Plummer and Wilder also showed that previous to thyroidectomy there was a positive correlation between the exophthalmos and the basal metabolic rate, and also that the incidence of exophthalmos in exophthalmic goiter has decreased in later years.

Before discussing the pathogenesis of exophthalmos associated with hyperthyroidism, and discussing rather briefly the relationship between the two, I want to report two cases of malignant exophthalmos which developed following thyroidectomy and in which all other signs of thyrotoxicosis have disappeared.

*Case 1.*—The first patient, whom I saw with Dr. Regnier, was a farmer thirty-one years old, who entered the hospital January 19, 1940. His symptoms were those typical of hyperthyroidism: namely, tachycardia, tremor, nervousness, loss in weight, dyspnea on exertion, and moderate exophthalmos with occasional diplopia. These symptoms had all developed about one year before admission. Examination showed a typical "thyroid stare," moderate exophthalmos with positive Stellwag and Graefe signs. Pulse rate was 90. The thyroid was moderately enlarged and there was a gross tremor of the hands. Basal metabolic rate was plus 43 per cent. Thyroidectomy was done January 22, 1940, which consisted of a subtotal lobectomy with complete removal of the isthmus and pyramidal lobe. Postoperative recovery was rapid and uneventful.

He had no further complaints until July, 1940, six months following the operation, when the exophthalmos became progressively worse. The conjunctiva of both eyes became chemotic and he was unable to close the lids completely. The left eye was slightly more proptosed than the right and developed three small ulcers on the lower half of the cornea in the exposed area that could not be completely covered by the eyelids. Exophthalmometer readings made at this time were 26 for the right eye and 28 for the left. His basal metabolic rate was minus 10 per cent and all other signs of hyperthyroidism had disappeared. He was hospitalized, given atropine ointment, and a moist chamber dressing to further protect the left eye. X-ray therapy to the pituitary was begun and continued until he had had 950 Roentgens on each side. In ten days the ulcers had healed completely and on September 24, 1940, the exophthalmometer readings were 23 for the right eye and 24 for the left eye. To date, about a year and a half later, he has had no further trouble.

*Case 2.*—The second case presented a more difficult problem to handle, and had, as you will see, a much more malignant course. I am indebted to Dr. Nordland for the privilege of seeing this case and for his rather complete history and summary of her findings. She was a single woman, thirty-four years of age. Her history of hyperthyroidism dated back about three years and consisted of nervousness, fatigue, tachycardia, loss in weight, and exophthalmos. The thyroid was uniformly enlarged and firm on palpation. The exophthalmos was mild in degree, but was not measured by exophthalmometer at this time. The basal metabolic rate was plus 33 per cent; pulse rate 108. After rest in bed and Lugol's solution, the basal rate was plus 23 per cent. On July 2, 1940, a subtotal lobectomy of the thyroid was done. Recovery was rapid, with disappearance of all symptoms except the exophthalmos. The basal rate three months following the operation was minus 10 per cent; and six months after operation was minus 1 per cent. At this time, namely six months following the operation, the exophthalmos had rather markedly increased. She was seen at this time by Dr. Frank Burch, who found diplopia and marked weakness of convergence. The exophthalmometer readings taken by him were 26 for the right eye and 22 for the left eye. The patient now was absent from observation for about three months. At this time she was seen by Dr. Edward Burch, who found the proptosis of the right eye had increased from 26 to 29, and an ulcerative keratitis was developing in the right eye. She was given a protective glass and advised by Dr. Burch to have an orbital decompression to preserve vision. The left eye had remained at a reading of 22, which was the same as three months previously.

The exophthalmos of the right eye gradually increased during the next month, but the excoriated cornea showed little change. She was hospitalized, and given large doses of Lugol's solution and thyroid extract. X-ray therapy to the pituitary area on each side was given in doses up to 480 Roentgens. The right eye was protected by a moist chamber. The proptosis remained about the same, and the patient at this time was seen by Drs. Benedict and Adson, who advised that an orbital decompression operation would probably not save the right eye. The corneal ulceration had rapidly progressed to necrosis and perforation. Enucleation of the right eye was done May 1, 1941. Immediately following the enucleation of the right eye, the exophthalmos of the left eye began to progress and on May 5, 1941, four days following enucleation, the exophthalmometer readings increased from 22 to 25. A moist chamber was used to protect the left eye and more x-ray therapy was given to the left orbit and both pituitary areas. A small ulcer developed on the lower half of the left cornea, but fortunately the ulcer healed and the proptosis gradually receded to a point where now the patient uses only protective glasses.

The conjunctiva and orbital tissues of the right orbit are still slightly prolapsed, nine months following enucleation.

This interesting case caused all of us who saw her considerable concern and worry, as at one time it looked as though she would lose her second and only eye.

The pathologic history of malignant exophthalmos is fairly well understood and has been partially demonstrated, at least in the microphotographs of eyes that have been removed. The pathogenesis of its development, however, has still not been satisfactorily explained. It has been shown that malignant hyperthyroidism can exist without exophthalmos and that malignant exophthalmos can exist without any symptoms of hyperthyroidism or thyrotoxicosis.

Both clinical and experimental evidence has proved conclusively that the thyroid enlargement, the thyroid epithelial hyperplasia, and the exophthalmos are due to hormones secreted or controlled by the anterior pituitary, or hypothalmos, or both.

It is interesting to follow through the literature for the past ten years and find "hints," deductions, or statements which gradually lead up to the present-day concepts of Hertz, Means, Williams, Collip, and of Heyl and Billingsley, that there are at least two and possibly three thyrotropic hormones, and that one or possibly two are responsible for the thyroid disturbance, and still another is responsible for the orbital trouble, namely, exophthalmos, diplopia, paresis of accommodation, Möbius, Dalrymple, Stellwag, and Von Graefe signs.

Hertz, Means, and Williams, of the Massachusetts General Hospital have elected to classify Graves' disease as an endocrine imbalance, and to subdivide it into (1) the classical type, in which exophthalmos is absent, or, if present, is well controlled by therapy or thyroidectomy; (2) the special ophthalmic type in which thyrotoxicosis is not manifest or has subsided following therapy or thyroidectomy, and the ophthalmopathy has become aggravated. They argue that there is a definite balance between the thyroid stimulating horome (T.S.H.) or thyrotropin and the thyroid hormone or thyroxin. An excess of thyroid hormone supplied to the tissues produces hyperthyroidism. This excess of thyroxin in the tissues is due to an over-activity of the anterior pituitary or to an imbalance of the hypothalmos and the pituitary. The thyroid hormone promotes diuresis, while the T.S.H. promotes water storage, and would be effective in producing exophthalmos by local water storage within the orbit. Hertz, Means and Williams have shown that in the special ophthalmic type there is a higher output of T.S.H. in the urine than in the classical Graves' disease or in normal persons. They believe that thyroidectomy, after full iodinization, is the best treatment for the classical type of Graves' disease, but that in the special ophthalmic type, thyroidectomy is not indicated and may even aggravate the ophthalmopathy.

**Discussion**

DR. H. B. ZIMMERMANN, Saint Paul: I have had a very interesting case recently which illustrates pretty much what Dr. Camp said about the association of two types of symptoms. This young man developed unilateral exophthalmos associated with quite a high fever and systemic evidence of infection. It looked to be pretty obviously an inflammatory thing in the orbit. An incision was made behind the orbit and pus evacuated. The condition at that time was assumed to be an ethmoiditis. The wound drained profusely, the systemic symptoms of infection cleared up, there was some recession of the proptosis, but the vision in the eye was lost. A month or two later the patient developed definite symptoms of exophthalmic goiter. Up to this time it was a unilateral exophthalmos probably due to retrobulbar abscess. Now, as he began to lose weight, it seemed to be a case of Graves' disease. I was asked to do a thyroidectomy. I somehow had a hunch that something was going to be wrong and I advised the man I would do the operation but not to expect too much. I did the thyroidectomy. His toxic symptoms disappeared and I immediately had him put under Dr. Burch's observation. As predicted, the exophthalmos in the good eye continued until Dr. Burch became alarmed about this eye. Wallace Ritchie did a decompression from above and recently I think he has been much better, though I have not seen him since.

DR. E. A. REGNIER, Minneapolis: From Dr. Camp's report, I think both of these cases demonstrate several factors at work in exophthalmic goiter. Both patients had moderately high basal metabolic rates before being put under treatment. Subsequently, they had clinical cures with metabolic rates of minus 10 per cent. Operation did away with the toxic symptoms and still the exophthalmos continued.

A patient I saw a few years ago, a young woman, had been very ill, with a temperature of 105° to 106°, with what looked like acute follicular tonsillitis. After the fever subsided, she remained very ill and her pulse ran about 140, and basal metabolic rate was over 60. She was put on iodine treatment and developed bilateral exophthalmos. In about two weeks' time she was in condition to warrant thyroidectomy. After operation the exophthalmos receded in one eye and in the other eye it seemed to progress. She was given iodine in small doses for about eight weeks and then the exophthalmos receded in one eye entirely, which left her somewhat disfigured. One eye was prominent and much larger than normal. Whether or not the iodine had anything to do with inhibiting the exophthalmos is problematical and the unilateral exophthalmos became stabilized with no corneal complications. These three cases, demonstrate endocrine factors outside of the thyroid, probably in the anterior pituitary, which remain over-active for some time following removal of the toxic thyroid.

I would like to ask Dr. Burch what he has to offer us in the way of palliation in these cases short of orbital decompression?

DR. F. E. BURCH, Saint Paul: I have been unfortunate enough to see a number of cases similar to those so well presented by Dr. Camp, and including his case. Four eyes have been lost. The first one was seen in 1928 and has been fully reported in the November, 1929, MINNESOTA MEDICINE. Progressive exophthalmos began in one eye eighteen months after a subtotal thyroidectomy and was at first diagnosed as a pseudotumor of the orbit. A Kronlein exploration was done elsewhere. The biopsy revealed nothing but edematous fat. Eventually both eyes were lost.

There are several difficult things about these postoperative malignant exophthalmos cases. They come to the ophthalmologists complaining of epiphora, frequently of diplopia, some followed by intense conjunctival chemosis, the diplopia frequently preceding the intense proptosis. The outstanding thing one finds on exploration or after exenteration is the enormous increase in size of the extraocular muscle, sometimes as

large as lead pencils. In the case mentioned, reported by me, there was an intense hypertrophic degenerative myositis of all the extraocular muscles, an increase in the orbital content of about 40 per cent, mostly due to edema. I do not know how to explain the enormous hypertrophy of all the muscles or just why diplopia developed so early and before marked proptosis. It is possible that this may be due to a pressure paralysis of the nerves supplying the extraocular muscles.

In Schmeltzer's work exophthalmos could be experimentally produced in animals in from ten to twenty days after injection of beef anterior pituitary lobe. He found that when the ganglion was removed on one side the animals developed binocular exophthalmos equally. That there is a thyrotrophic hormone factor with which the anterior pituitary lobe is directly concerned seems most plausible.

All but one of the seven malignant cases I have have had low, normal or subnormal basal metabolism. One case with progressive exophthalmos died without thyroid operation. None of these cases had any of the usually classical signs of hyperthyroidism at the time of the progressive exophthalmos. They did not have tachycardia nor were they particularly nervous. The Von Graefe, Stellwag and Moebius signs were absent in many cases later.

Treatment is difficult. They progress in spite of any attempt to suture the lids, do a canthotomy, incise the orbicularis or remove orbital fat. The cornea begins to break down, apparently on a purely trophic basis without any actual infection.

Three cases seen by me improved under thyroid therapy or Lugol's solution, in one case under administration of both thyroid extract and iodine.

I was fortunate enough to see one patient whose exophthalmos had been treated by decompression of the frontal and ethmoid. It seemed to me a less mutilating result than the one patient I have seen after a Naffziger decompression. At present I have a case under observation undergoing x-ray treatment of the pituitary, which probably also included the orbits. This has resulted in a reduction from 25 and 26 mm. down to 22 and 23 mm. in exophthalmometer measurements and the patient has had a very great relief from symptoms, especially headaches.

The non-operative treatment of these cases, in my opinion, is x-ray therapy of the pituitary (which probably also includes the orbits). The operative treatment for extreme cases should be a decompression of the frontal and ethmoids, or perhaps a Naffziger operation. The ophthalmologist is "on the spot" to know just how to handle each problem and certainly needs the help of the internist, radiologist, rhinologist and neurosurgeon.

DR. WILLIAM T. PEYTON, University of Minnesota (by invitation): If this is entirely a matter of hormones, it is remarkable that only one eye should become exophthalmic or at least that one eye should become more involved than the other. It is, however, not beyond the realm of possibility. Sometimes we see in girls at puberty one breast developing before the other.

I saw this second case described by Dr. Camp, at the time she had ulceration in the cornea of the second eye. I admit that I urged the patient to have orbital decompression; but in view of the end result, it would seem that she was right in refusing to have it done. The question is: should these patients have decompression or should they be given x-ray therapy? I have never done a decompression. It has been the policy at the University Hospitals to treat progressive exophthalmos with x-ray, and we have not found it necessary to perform operation later. However, the operation is neither difficult nor mutilating. It consists of an incision entirely within the hairline, raising up the frontal lobe, removing the roof of the orbit and opening the capsule.

After Dr. Nordland invited me to come here this evening, I went down to the x-ray department and looked up the cases we have treated. Nine cases were treated. Two had lost one eye before treatment. Since treatment, one was followed three years without progression of the exophthalmos, five were followed one year without progression, one was followed a few months and found to have regression. Two were not followed.

Of course, we realize that a follow-up of only one year is not sufficient and that these people must be followed longer before definite statements can be given as to whether or not this treatment is effective. So far, however, no eyes have been lost after treatments were given. Our present attitude is that x-ray therapay seems to be adequate treatment but it is still not a settled question.

DR. REGNIER: Do you consider that x-ray therapy affects the pituitary itself or does radiation of the retrobulbar tissues inhibit the progressive exophthalmos by removing the edema and cellular infiltration in the retrobulbar space?

DR. PEYTON: We admit we cannot irradiate the pituitary alone without irradiating the orbit also. The answer to your question, therefore, is that we don't know.

DR. MARTIN NORDLAND, Minneapolis: These case reports presented so well by Dr. Camp are most interesting and represent one of the most difficult problems related to exophthalmic goiter.

The cause of progressive exophthalmos following operations for toxic goiter has not been fully explained. Various theories, as well as carefully conducted studies along this line, have been reported, but as yet no satisfactory reasons have been established. Classification of recurrent hyperthyroidism can readily be made on the basis of whether the previous removal of the gland was adequate or inadequate, and of course the proper treatment in the latter type of case is prophylaxis. This consists in a thorough removal of the gland, including the isthmus and also the pyramidal lobe if present, leaving only a thin layer on the posterior capsule and taking care to locate and resect any retrotracheal extensions. This procedure will prevent most, but not all, recurrences, and it is in this latter type that one cannot attribute progressive exophthalmos to inadequate or incomplete surgery.

In only a few cases a partial return of some of the signs of hyperthyroidism is present and it is in these cases especially that therapeutic measures fail. In a certain group of cases, exophthalmos, frequently hardly noticeable pre-operatively, becomes more and more progressive following removal of the gland, so that permanent damage seems a likely factor in the production of these changes. The pathologic change responsible for this condition, as described by Naffziger and Jones, is of mechanical origin, and is the result of pronounced swelling of the extraocular muscles to from three to eight times their normal size. They recommend for these cases of progressive exophthalmos following thyroidectomy, decompression by removal of the roofs of the orbit through bilateral frontal bone flap.

As Dr. Camp has pointed out, this procedure was not applicable in these cases.

Dr. A. E. Cardle of Minneapolis then read his Inaugural Thesis on "The Pituitary Gland and Diabetes Mellitus." Lantern slides were shown.

## THE IMPORTANCE OF THE PITUITARY GLAND IN DIABETES MELLITUS

A. E. Cardle, M.D.
*Minneapolis, Minnesota*

The brilliant work in 1890 by Von Mehring and Minkowski, in which they discovered that the complete removal of the pancreas in dog is followed by symptoms which closely resembled human diabetes mellitus, paved the way for one of the greatest discoveries of mankind. This work and the deductions which have come as a result are well known to you all. Years of research finally culminated in the preparation by Banting and Best in 1921 of an active and serviceable pancreatic extract, by the use of which they were not only successful in controlling symptoms in depancreatized animals but in human diabetes mellitus as well.

The isolation of the active principle of insulin as a crystalline entity by Abel and his co-workers in 1926 gave the exact chemical composition and structure of insulin, and finally the discovery by Hagedorn in 1925 of the protamine combination added still another important step in the control of altered carbohydrate metabolism. With the discovery of insulin new interest at once arose in the disease, for now we had a definite therapeutic agent with which to attack the disease and one which gave results. It is still our strongest weapon.

Diabetes is a disturbance of carbohydrate metabolism, and at first it appeared that insulin was the answer to this disturbance. The physiologists, however, are giving us a new viewpoint, and diabetes is no longer regarded wholly as a lack of pancreatic activity but is a disease due to disturbance of endocrine regulation. It would indeed be strange if nature had concentrated the control of such a vital function in one organ. It is more logical to believe that sugar disposal is more carefully safeguarded by multiple mechanisms. This has opened an entirely new field of research of great importance.

Experiments in this field are showing that not only the pancreas, but also the pituitary, the thyroid, adrenal, and even at times the ovaries and testes influence carbohydrate metabolism. A new conception and a broader outlook in the treatment of diabetes mellitus is slowly approaching. Clinically we are recognizing more and more that certain cases of diabetes differ in some respects from the usual type of case. During the past fifteen years I have been working with a large group of diabetics at the Minneapolis General Hospital and it is not an uncommon experience to find patients, under good management, which fail to respond to well established methods of treatment. To explain the cause for this "difficulty in regulation" is not easy, and I am certain that you who treat diabetes have at times been confronted with the same problem. I am sure that in some of these cases this glandular relationship may play a part. To say that it may play a part is one thing but to explain the actual mechanism is another thing.

I wish tonight to discuss one phase of this glandular relationship—i.e., the importance of the pituitary. Of all the endocrine glands involved in carbohydrate metabolism, and presumably in diabetes mellitus, the most important, exclusive of the pancreas, is the anterior lobe of the pituitary.

To do this I am going to give briefly the results of investigations in this field. This work is chiefly with animals, and as with every new branch of investigation the results are sometimes confusing. However, I believe that certain conclusions are definite, inasmuch as the investigations have been repeated with similar results. From these, certain applications can be made to human diabetes, which help not only in explaining some features of the disease, but may be of great usefulness in treatment.

### Experimental Evidence Showing the Importance of the Pituitary Gland

The frequent occurrence of glycosuria in acromegaly and pituitary tumors focussed the attention of investigators upon the relationship of the pituitary to the pancreas, but it remained for Houssay and Magenta in 1925 to first confirm the relationship. They found "that the diabetic symptoms which could be produced in dogs by pancreatectomy were considerably ameliorated by removing the pituitary gland; performed either before or after the removal of the pancreas." In other words, no diabetes, or only a very mild one, will develop where the pituitary has been removed. This work was a remarkable discovery. Since that time these findings have been frequently confirmed, not only in dogs and toads, but also by Long and Lukens in cats. These animals can live in fairly good health for as long as six months without insulin, and as such serve as very sensitive test objects.

Further, studies by Evans has shown that injections of an extract of the anterior pituitary into well-nourished dogs, cats, and rabbits leads to hyperglycemia, glycosuria, polyuria, and ketonuria in from three to seven days. Following injection of the extract into animals there is a gradual fall of insulin content of the pancreas to very low levels, and symptoms of diabetes persist one to three days after cessation of the injection. At its height the condition may simulate in severity that produced by partial pancreatectomy. This pancreas, if examined, will show degranulation and hydropic degeneration of the beta cells of the islets of Langerhans. Degeneration of this kind was common in islets of dogs which were undergoing treatment with the extracts and may be brought about by the strain of sudden induction of the diabetic condition.

Upon cessation of the injections, if the degenerative condition has not been present for too long a period, the insulin content may return to normal. However, if the amount of extract is increased (25 grams of fresh gland daily), the reaction in the pancreas is no longer reversible, and the point is reached where the degeneration in the islets becomes irreversible, so that the diabetes continues indefinitely. We therefor see the following effects produced by the injections of anterior pituitary extract: (1) temporary diabetes—a state produced by a small number of injections with recovery possible when the injections are stopped; and, (2) permanent diabetes—a state produced by more severe

injections from which the pancreas will not recover.

Ham and Haist have reviewed the histology of the pancreas of dogs in various stages of anterior-pituitary induced diabetes: those in temporary diabetes, those recovered from temporary diabetes, and those in permanent condition. They found that "daily injections of this extract led to a progressive degranulation of the beta cells of the islets of Langerhans, and beginning hydropic degeneration, which was almost complete after seven daily injections. If allowed to recover the beta cells recovered about one-half of their granules three days after the last injection. Mitotic figures were also observed in these cases. However, in those dogs in which permanent diabetes developed, granular beta cells became very scarce and there was replacement of the islets by hyaline material." It was interesting to note, at this point, that this latter change may be reflected in certain human beings. Hyaline degeneration of the islets has been noted in about 50 per cent of the persons dying of diabetes. This varies in amounts. Arey, of the University of Minnesota, has noted that it gives the staining reactions of amyloid. However, I have discussed this point personally with Dr. Arey and he states the lesion is not specific for diabetes, nor is there any relation between the clinical severity of the disease and the extent of hyaline replacement of the islets.

These are the experiments that justify the belief that diabetes may not be due only to a lack of insulin by a disordered pancreas per se, but that the production of insulin may be deficient due to the activity of the anterior pituitary gland.

Analysis has shown that the extract of the anterior pituitary contains two important factors: (1) a pancreatropic factor which stimulates the formation of pancreatic islands and increases the amount of insulin; (2) a diabetogenic factor which consists of two parts, glycocuric and ketogenic. This latter diabetogenic factor has also been given by other authors the name of contra-insular hormone, and is the hyperglycemizing substance which stimulates decomposition of glycogen in the liver. In passing, however, one must note that the extract does not exert a similar action on the guinea pig, mouse, or rat. In these animals treatment with anterior pituitary extracts can increase both the amount of islet tissue and the amount of insulin found in the pancreas. This is likely due to a preponderance of the pancreatropic effect of pituitary extract, and is, undoubtedly, compensatory and precedes the condition which occurs in dogs.

There are many features as to the probable method of action of the extract—the effect on the liver, etc. —of which time will not permit an explanation. One point seems fairly well established. The diabetogenic factor lies in the anterior lobe and is probably secreted by the eosinophile cells. The only point in question is the directness of the action. Observations by Lucke indicate that the anterior pituitary extract when injected causes a liberation of adrenalin, which in turn leads to insulin antagonism and hyperglycemia. Houssay, however, is still of the opinion that the effect is produced directly in the liver, since the removal of the other glands as well as the adrenals left the chain unaltered. The liver is the only organ necessary for the production of diabetogenic effects by the anterior lobe extract.

To recapitulate, the impression from experimental work seems fairly well established, namely, that there is a distinct antagonism between insulin and the diabetogenic factor of the anterior pituitary.

### Clinical Observations Showing the Pituitary Relationship

The more we advance in the knowledge of carbohydrate metabolism and especially as it relates to diabetes mellitus, the more we appreciate that certain clinical findings may be expressions of the pituitary relationship. I wish to enumerate and discuss certain of these clinical findings and show this relationship.

1. *Growth and Weight.*—These simple physical characteristics which often go unnoticed are beginning to be recognized as evidence of importance in the physiology of diabetes. Observations along these lines have produced direct evidence of hypophysial relationship.

Priscilla White has reviewed the subject in relation to juvenile diabetes, and has included certain data which appear significant. Study of 1,250 patients with juvenile diabetes (onset before the age of fifteen) indicated that 177 showed evidence of pituitary involvement. One hundred seventy-six of these showed involvement of the anterior lobe (9 hyperactivity and 168 hypoactivity). Certain other interesting observations were made in support of her findings.

(a) The age incidence of the onset of juvenile diabetes follows peaks of increasing activity of the pituitary gland. These are about ages six and twelve.

(b) Overgrowth is the most common precursor of juvenile diabetes. Obesity is the most common precursor of diabetes in adults. In adults the most common age group for the development of diabetes is fifty-three years. At this time there is usually an excess of anterior pituitary hormone being produced. This is especially so in women, where an excess of gonadotropic hormone is being produced and excess weight is a common condition. In this connection Young's experiment is very interesting, in that after repeated injections of anterior pituitary extract his dogs became extremely obese prior to the onset of diabetes.

In treating children with the growth hormone it must be kept in mind that one may produce a diabetes through a disturbance of the pituitary. Strauch in 1939 reported a case in a boy seventeen years of age. Six months after the beginning of treatment, violent thirst appeared and he complained of severe exhaustion. Examination revealed sugar and acetone in the urine and a marked elevation of blood sugar value. It was necessary to administer insulin in order to control the condition. The author warns against the indiscriminate use of hormones without strict clinical observation. Also in children hepatomegaly is a complication of diabetes. Inasmuch as it is known that injections of anterior pituitary extract will result in the storage of fat

in the liver we are led to believe in a hormone which controls glycogen metabolism.

2. *Insulin Resistance.*—To those who are familiar with this condition you recognize it at once as one of the difficult problems in the treatment of diabetes. At first the case appears simple enough, but soon we find that it will not respond to ordinary measures of diet and insulin. Instead there is required large doses of insulin out of all proportions to what would appear to be needed. There is a definite insensitivity to the hypoglycemic action of insulin. Many cases require six hundred to one thousand units of insulin a day before the diabetic symptoms are controlled. To date we have had a number of explanations for this phenomenon. These are chiefly infection, allergy, lack of insulin absorption, etc. However, we are beginning to see that the pituitary is likely a factor in a number of these cases. This subject has been splendidly reviewed in a recent article by Martin, Leister, and Strouse. They tabulated in detail not only their own cases, but also many others which they could find in the literature, in an attempt to ascertain the cause of the resistance. A definite pituitary influence was found in many of their cases. Not all insulin resistance cases are due to this, but the activity of the anterior lobe is undoubtedly an extrapancreatic factor. The experiment of De Wesselow and Griffiths is interesting in this respect. They found that the plasma of a certain type of diabetic patient contains an extract of the anterior pituitary. The administration of such plasma to a fasting rabbit results in a depression of the animal's sensitivity to the hypoglycemic action of administered insulin. This experiment lacks confirmation, but it is very suggestive.

3. *Ketosis.*—It has been assumed to date that the development of ketosis is an alteration of fat metabolism associated with altered carbohydrate metabolism. However, it has been shown that the urinary excretions of acetone bodies by fasting or fat-fed rats, normally quite small, may be gradually increased by the injection of anterior pituitary extracts, and there is a similar rise in blood ketones, which is a more sensitive and dependable index of the phenomenon, since acetone and diacetic acid are threshold substances. There is good evidence to show that there is an increased outpouring of ketone bodies by the liver, rather than a diminished utilization of them; and in general the ketosis is accompanied by a transfer of fats from the depots to the liver, in which large quantities may accumulate. This is an important observation.

This stimulation is likely produced by the aforementioned ketogenic part of the diabetogenic factor. There are some confusing statements which arise in regard to this particular point, but it would appear that a new understanding of ketosis is arising which will help greatly in understanding the mechanism.

4. *Dietary Management.*—To date there has been considerable controversy regarding the type of diet which is best in the management of the diabetic. We have gone through the period of high-fat and high-carbohydrate diet. Most everyone now has agreed upon a middle ground. However, experiments involving the pituitary are beginning to give us a better understanding as to how the type of diet may be of value in the course of the disease. Best, Ribaut, and Haist found in rats that the change in the islet cells which is produced by the injection of anterior pituitary extract, could be prevented by fasting or the feeding of a diet of fat. At the same time there is a definite reduction in the insulin content of the pancreas. On the other hand animals fed on a diet high in sugar content show a marked increase in the insulin content of the pancreas, which is due to an overactivity of the cells.

The importance of this observation, of course, is that a pancreas which is being permitted to rest by dietary measures or by insulin will be saved from degenerative changes. Fasting, fat diets, or insulin inhibit the action of the anterior pituitary and thus prevent the onset of diabetes. If the clinician is convinced that stimulation of the pancreas is necessary, diets rich in carbohydrate and the use of insulin are indicated; but if he believes the pancreas should be rested then the use of fasting, fat feeding, and insulin is desirable. These are important points, and more work should be done along these lines.

5. *Hyperinsulinism.*—Here is a disorder which is the antithesis of what has been presented so far, and is included under this heading inasmuch as it would seem to be definitely associated at times with a pituitary disorder. Practically, this would be one of our best therapeutic approaches to this disease; namely, that an active anterior pituitary would be important in the control of the disease, inasmuch as we wish to reduce the activity of the pancreas. Granted that the case of adenoma might be an exception, the cases of hypertrophy and hyperplasia of the pancreas would seem to present excellent material. This field is entirely new, and there has been very little work along this point, but the application must be kept in mind as one comes in contact with these cases.

There are many other points which might be raised to show the pituitary relationship besides the ones that I have just mentioned. Undoubtedly the pituitary gland plays a part in the pregnant diabetic. It has been thought in the past that the variations in the mother's tolerance was due entirely to the compensatory part played by the pancreas of the fetus. However, in view of the fact that many cases of diabetes in pregnancy are helped by the use of various glandular substances, the effect of these is probably through the medium of the pituitary. At the present time studies along this line are being made, and as our laboratory methods improve we can expect much light to be thrown upon this field. A suggestion has been made that the effect of fever on carbohydrate metabolism may be explained through the action of the pituitary. Zondek and Katz have made some studies in both of these fields, but their conclusions are somewhat indefinite.

All of the points enumerated, I believe, are significant

in showing that there is clinically a definite pituitary influence exerted in diabetes mellitus.

### The Significance of the Anterior Pituitary to Human Diabetes

The natural outcome of experiments of Houssay, Evans, and Young has been an attempt to correlate their findings with clinical application. The fact that pancreatectomy in dogs produces diabetes, which could be relieved by insulin, and the finding of islet lesions in many cases of human diabetes led to the view that diabetes was a disease of the pancreas per se. The recent work which has just been described showing that the same changes in the pancreas could be produced by pituitary extract has somewhat modified this view.

No doubt human diabetes can result from lesions of the islets due to pituitary origin, and very likely certain changes are taking place in the human pancreas depending upon the severity of the action. Whether or not changes in the human pancreas are similar to those which take place in the dog cannot as yet be proved. The fact that changes cannot be found in many human beings dying of diabetes does not disprove this theory, inasmuch as the material is not examined immediately and to date proper stains have not been used. Also human diabetes usually runs a slower course and the breakdown of the beta cells is so gradual that the discovery of an occasional cell in degeneration is uncommon.

We know that the activity of the pituitary must vary from time to time since our cases of diabetes vary in activity from time to time. Take, for instance, a human patient with very mild diabetes and very obese. Reducing this diabetic may improve the tolerance which will eliminate the disease and possibly make the patient non-diabetic. Also, we know that the action of the sex hormones, which have a definite relationship to the pituitary, vary from time to time. It is conceivable that short periods of hyperactivity of the pituitary might result in liberation of varying amounts of diabetogenic substance which might produce temporary changes or permanent changes.

Ham and Haist believe that "diabetes is due, not to a decrease in a fixed production of insulin, but rather to an increase in the ratio of insulin need to insulin production. The anterior pituitary stimulates the pancreas to excessive function, causing cellular degeneration. The extract acts on the tissues and organs, other than the pancreas, increasing the need for insulin; and it also exerts a trophic effect on the pancreas causing the cells to secrete at a high rate. The early stages of diabetes produced by anterior pituitary extract can be explained by increase need for insulin; the latter stages (permanent diabetes) by diminished production. The diabetes due to increased need will lead to exhaustion of the pancreatic cells."

Clinically, of course, we need in some way to inhibit the activity of the anterior pituitary. A number of attempts have been made to do this. Radiation has been tried without any apparent success. Surgical removal of the pituitary was reported by Chabanier. A successful hypophysectomy was performed which definitely decreased the amount of insulin needed for treatment. Unfortunately, the boy developed tuberculosis and died, but it does show results from an heroic piece of surgery. It has been definitely shown that injection of estrogenic substances at the time of menopause in diabetics will inhibit the excessive production of the diabetogenic factor and cause a diminution in the insulin requirement. This has been shown repeatedly and, of course, has a definite practical importance in the treatment of diabetics at the time of menopause. There is some proof that androgen treatment will have a similar result in males, but the cases are too few to draw any conclusions.

The importance of recognizing therapy in this direction is not only for the treatment of the disease itself, but for the possible prevention, which is a matter of great importance. The use of insulin alone will not prevent the disease, but if a clear understanding can be had as to the actual relationship of the pituitary we may be able to make strides in this direction. Best et al. have shown that "diabetes can be prevented in a dog receiving injections of anterior pituitary extract, provided simultaneously insulin is administered." This for the first time raises the possibility of a method by which diabetes can be attacked and stopped in its early stages and even avoided by prophylactic means. One further experiment is notable. Depancreatized dogs show a marked decrease in glycosuria when given extraperitoneal injections of serum from other dogs treated over several months with anterior pituitary extract. This serves the function of an antifactor which is antagonistic to the anterior pituitary.

### Case Report

It is at this point that I would like to report briefly a case of my own. I realize that the results and impressions are open to criticism, inasmuch as it was a private case and the observations could not be continued over any length of time, but I believe they are significant enough to show a possible practical application along these lines.

A thirty-five-year-old white man was admitted to Abbott Hospital on May 14, 1941. He stated that he had been well until the spring of 1939, at which time he developed sweating, trembling of the hands, and emotional instability. These symptoms appeared in an attack-like manner, and on two occasions he collapsed without losing consciousness. He was seen through the summer of 1939 in a clinic where a diagnosis of hypoglycemia was made. He was placed upon dietary management and was fairly well controlled until October 14, 1940, when he developed periodic seizures of a similar nature which could not be controlled by dietary means. I first saw him in May, 1941. He was sent to the hospital for the purpose of study and to see whether or not something might be done to help him. General physical examination was negative. The blood pressure was 120/80. There was no suggestion of abnormality in the adipose distribution. The urine examination was negative. The hemoglobin was 83 per cent, and the white count was 6,800. A glucose tolerance test revealed the following:

Fasting—71 mg.
30 minutes—133 mg.
1 hour—90 mg.
2 hours—69 mg.
2½ hours—59 mg.

Simultaneously venous and arterial blood sugars showed 90 and 112, respectively, with a capillary blood sugar loss of 22 mgs. Basal metabolism was normal. The patient was placed upon a diet and was given a course of polyansyn, which is the extract of the anterior pituitary gland and which is shown to have the diabetogenic factor included. After a week's treatment with this drug a glucose tolerance test was as follows:

Fasting—100 mg.
30 minutes—133 mg.
1 hour—102 mg.
2 hours—66 mg.
2½ hours—90 mg.

You can see from these observations that there appears to be a definite rise in the blood sugar. These were the only observations I was able to make, inasmuch as the patient was very actively interested in some operative procedure. He was accordingly advised that a condition in the pancreas existed, the type not exactly known, and that exploration was suggested. The mortality of this was explained to him and it was suggested that I preferred keeping him upon medical treatment. However, he insisted upon the operative procedure. Accordingly, he was referred to a surgeon for section. An adequate exposure of the pancreas was accomplished, and when it was exposed there was found to be a hypertrophy of the gland. There were no adenomatous changes. Therefore, a resection of the gland was attempted. During the course of the resection such extensive bleeding was encountered that it was necessary to stop, pack the wound, and take the patient back to his room. He died on the sixteenth postoperative day, because of a sudden abdominal hemorrhage. Autopsy revealed a pancreas which weighed 126 grams. There was no tumor which could be detected, and the pathologist reported hypertrophy of the pancreas. Death was due to traumatic hemorrhage from the splenic artery. This case, unfortunately for the surgeon, ended in a catastrophe, and if it had not been for the insistence of the patient in electing surgery, the step might not have been taken. However, be that as it may, it is my purpose in reporting this to bring out what does seem to be a definite antagonism in these glands, the reverse of those found in diabetes mellitus, in order that a more direct relationship of the pituitary might be shown.

Thus I wish again to emphasize that we are approaching a new era in our understanding of this disease. The results of the experiments and the practical applications, though meagre as yet, show definite progress in the right direction. The pituitary gland, I still believe, is the most important gland of all, as it affects carbohydrate metabolism. If we are to progress in the amelioration of this disease, we must be constantly on the alert for new signs and symptoms of pituitary activity.

### Summary

1. A review of the literature proves that experimentally there is a definite relationship between the pituitary and the pancreas in diabetes mellitus.

2. The anterior lobe of the pituitary is the active factor in this relationship, and the action is antagonistic to the pancreas.

3. Certain observations are given which show the importance of recognizing the activity of the anterior pituitary, clinically.

4. Points in clinical application are presented and discussed, together with a personal case report, to show the possibilities in the ever-widening field of diabetes mellitus.

5. If progress is to be made in the treatment of diabetes mellitus we must be on the alert to recognize the influence of the pituitary. It may be possible to alleviate the disease and it is hoped that the disease may actually be prevented.

In closing, I wish to quote from Joslyn's Memorial Address for Banting, presented before the American Diabetes Association:

"In the pituitary gland there is a hormone, not yet isolated, which injected into a dog will cause diabetes, but with each injection until the last massive dose there is a struggle for reversal of the process. There must be something like an antidiabetic hormone. Which one of you will discover it?"

### Bibliography

1. Anselmino, K. J., and Hoffmann, F.: Pituitary regulatory mechanism in the carbohydrate metabolism and its impairment in diabetes mellitus. A hormone of the carbohydrate metabolism in the anterior lobe of the hypophysis. Klin. Wchnschr., 13:1048, 1934.
2. Anselmino, K. J., and Hoffmann, F.: Separate changes of liver glycogen and ketone bodies of the blood under the influence of the carbohydrate metabolism hormone and fat metabolism hormone of the anterior lobe of hypophysis. Klin. Wchnschr., 13:1052, 1934.
3. Anselmino, K. J., and Hoffmann, F.: Participation of hypophysis in pathogenesis of human diabetes. Ztschr. f. klin. Med., 129:24, 1935.
4. Cermak, J.; Cordaro, M., and Syllava, J.: The influence of the sexual hormones on the course of hypophyseal diabetes. II. Policlinico (sezione medica), 47:169, (May 1) 1940.
5. Conference on Therapy: Management of diabetic emergencies. Jour. A.M.A., 115:6, (Aug.) 1940.
6. Corey, E. L., and Britton, S. W.: Hypophyseal and adrenal inter-relationships and carbohydrate metabolism. Am. Jour. Physiol., 126:148, (May) 1939.
7. Davis, L.: Relation of hypophysis, hypothalmus and automatic nervous system to carbohydrate metabolism. Ann. Surg., 100:654, (Oct.) 1934.
8. de Wesselow, O. L. V., and Griffiths, W. J.: The possible rôle of the anterior pituitary in human diabetes. Lancet, 1:991, (May 2) 1936.
9. Eitel, H., and Loeser, A.: Relations between anterior lobe of hypophysis, thyroid and carbohydrate metabolism of liver. Klin. Wchnschr., 11:1669, (Oct. 1) 1932.
10. Evans, E. I.: Diabetogenic principle of the anterior pituitary. Proc. Soc. Exper. Biol. and Med., 30:1370, (June) 1933.
11. Haist, R. E.; Campbell, J., and Best, C. H.: Prevention of diabetes. New England Jour. Med., 223:607-15, (Oct.) 1940.
12. Ham, A. W., and Haist, R. E.: Histological study of trophic effects of diabetogenic anterior pituitary extracts and their relation to the pathogenesis of diabetes. Am. Jour. Pathology, 787-812, (Nov.) 1941.
13. Houssay, B. A.: Diabetes as a disturbance of endocrine regulation. Am. Jour. Med. Soc., 193:581, (May) 1937.
14. Houssay, B., and Biasotti, A. J.: Carbohydrate metabolism and insufficiency of hypophysis. Jour. A.M.A., 96:129, (Jan. 10) 1931.
15. Jensen, Hans T.: Insulin. Endocrine secretions other than insulin—pituitary. pp. 169-182. Oxford University Press,
16. Joslin, E. P.: Treatment of diabetes mellitus, ed. 7. Philadelphia: Lea-Febiger, 1940.
17. Lawrence, R. D., and Young, F. G.: Oral anterior pituitary extract (Collip) in diabetes. Lancet, 239:709, (Dec. 7) 1940.
18. Lucke, H.: Relationship between the contra-insular hormone of the anterior lobe of the hypophysis and the substance of the posterior lobe of the hypophysis which influence carbohydrate metabolism. Ztschr. f. d. ges. exper. Med., 100:73, 1936.
19. Lucke, H., and Hahndel, H.: Investigations on the mechanism of action of the contra-insular hormone of the anterior lobe of the pituitary. IV. The influence of the hormone after the introduction of active extract into the cerebrospinal fluid. Ztschr. f. d. ges. exper. Med., 91:689, 1933.
20. Lucke, H., and Hahndel, H.: Investigations on the mechanism of action of the contra-insular hormone of the anterior lobe of the pituitary. V. The influence of sympathetic toxins and narcosis on the blood sugar reaction induced by the administration of contra-insulin hormone. Ztschr. f. d. ges. exper. Med., 91:696, 1933.
21. Lucke, H.; Heydemann, E. R., and Duensing, F.: Investigations on the mechanism of action of the contra-insular hormone of the anterior lobe of the pituitary. I. Anterior lobe of the pituitary, thyroid gland, and carbohydrate metabolism. Ztschr. f. d. ges. exper. Med., 91:106, 1933.
22. Lucke, H.; Heydemann, E. R., and Hahndel, H.: Investigations on the mechanism of action of the contra-insular

hormone of the anterior lobe of the pituitary. II. Anterior lobe of the pituitary, adrenal. Ztschr. f. d. ges. exper. Med., 91:483. 1933.
23. Lucke, H.; Heydemann, E. R., and Hahndel, H.: Investigations on the mechanism of action of the contra-insular hormone of the anterior lobe of the pituitary. III. Anterior lobe of the pituitary denervation of the adrenals and carbohydrate metabolism. Ztschr. f. d. ges. exper. Med., 91:492, 1933.
24. Marks, H. P., and Young, F. G.: Hypophysis and pancreatic insulin. Lancet, 18:493-497, (March 16) 1940.
25. Strauch, F. W.: Hypophysis and diabetes mellitus. Deutsch. med. Wchnschr., 65:1715, (Nov. 24) 1939.
26. Thomson, David L.: Glandular physiology and therapy. The anterior lobe of the hypophysis. Jour. A.M.A., 115:25, (Dec.) 1940.
27. White: Endocrine manifestations in juvenile diabetics. Arch. Int. Med., 63:39-53, (Jan.) 1939.
28. Young, F. G.: Permanent experimental diabetes produced by pituitary (anterior lobe) injections. Lancet, 2:372, 1937.
29. Young, F. G.: Anterior pituitary gland and diabetes mellitus. New England Jour. Med., 221:635-646, (Oct. 26) 1939.
30. Zondek, Hermann and Kaatz, A.: Hypophysial diabetes. La Presse Medicale, 46:1835, (Dec. 14) 1938.

### Discussion

DR. C. B. DRAKE, Saint Paul: One phase of the subject which Dr. Cardle mentioned is the glycosuria occasionally associated with pregnancy. I have never heard a satisfactory explanation of this finding but have thought it probably is associated with the change we know occurs in the pituitary during pregnancy. The enlargement of the pituitary at such times is sufficient to produce a demonstrable contraction in the visual fields. Presumably the enlargement is accompanied by an increased secretion, which might affect the sugar metabolism.

I have observed a woman who during three successive pregnancies ran glucose in her urine in considerable amounts which disappeared upon delivery. The glucose tolerance test was normal, which showed the kidney threshold to be reduced. No dietary control was adopted and no difficulty encountered. The pituitary effect, if that is what causes this condition, is not identical then with the condition known as diabetes mellitus.

I wonder whether Dr. Cardle has any additional ideas on this particular phase of the subject.

DR. MOSES BARRON, Minneapolis: There is no doubt from the clinical standpoint that the pancreas is the most important site for controlling sugar metabolism, but the work of Soskin of the Michael Reese Hospital seems to show that the liver plays a very important part in diabetes. The more recent work seems to show that, contrary to previous teaching, the fats do not burn in the flame of carbohydrate metabolism.

I would like to ask Dr. Cardle a question relative to the case he presented. He mentioned that at the autopsy there was a hypertrophy of the pancreas. Normally the pancreas varies a great deal in weight and it is difficult to decide when there is hypertrophy. Did the microscopic sections show hypertrophy and was there definite hyperplasia of the islands of Langerhans? In hypertrophy, there is more of an increase in the external secretory cells.

---

The meeting adjourned.

E. V. KENEFICK, M.D.
*Secretary*

## ESOPHAGEAL PERFORATION FROM A STOMACH TUBE

*(Continued from Page 280)*

and the fascia lateral to the sternohyoid muscle divided to expose the carotid sheath and thyroid gland. The thyroid was retracted medially and the carotid laterally, thus exposing the trachea and esophagus. The dissection was then carried downward behind the esophagus, into the retrovisceral space. In this last procedure care was exercised to avoid injury to the inferior thyroid artery and recurrent laryngeal nerve. On entering the retroviceral space, material which had escaped from the esophagus was immediately encountered. In this material were small pieces of chicken from her dinner the previous evening. The perforation was posterior and slightly to the left at about the level of the fifth cervical vertebra. The perforation was large enough to admit the tip of the little finger. The tip of the finger was held in the opening while the area below and about was cleaned out. Then iodoform gauze was packed loosely into the space below the opening and brought up and out through the wound. A small piece of rubber tissue was also brought out through the wound and the wound was sutured about these. No attempt was made to close the perforation in the esophagus.

At the time of operation the patient had a temperature of 101 degrees and a leukocyte count of over 14,000. The temperature rose to about 103° after the operation and the leukocyte count rose somewhat during the next two or three days, but both the temperature and the leukocyte count gradually came down to normal in about one week.

The patient was given intravenous glucose for about three days, but then was able to get enough food by mouth. During the first week after the operation considerable of the food came through the sinus. Some discharge continued for from six to eight weeks. The patient has been practically normal since.

Sulfanilamide in the wound and postoperatively was, no doubt, an important factor in reducing the virulence of the infection.

The nearest approach to this case which I have found reported was that of Snyder of Miami. In his case a probang was used to dislodge the material in the esophagus. Operation was not carried out until three days after the accident. Considerable discussion has appeared in the literature as to the treatment of perforations of the esophagus. Some advise treating them conservatively while others are emphatic in advising early operation. Many patients with slowly perforating or minute perforations have recovered without resorting to surgery, but large, immediate perforations of this type are surgical emergencies. The earlier operation is done, the better are the chances of the patient's recovery.

### References

1. Pearse, J. E., Jr.: Operations for perforation of cervical esophagus. Surg., Gyn. and Obst., 56:192-196, (Feb.) 1933.
2. Pearse, J. E., Jr.: The management of infections of the neck and their complications: Mediastinitis. Jour. Mo. Med. Assoc., 35:69-75, (March) 1938.
3. Snyder, John W.: Perforation of the cervical esophagus. Southern Med. Jour., 32:1080, (Nov.) 1939.

# REPORTS and ANNOUNCEMENTS

## MEDICAL BROADCAST FOR APRIL

The Minnesota State Medical Association broadcasts weekly at 10:15 o'clock every Saturday morning over Station WCCO, Minneapolis, Station WLB, University of Minnesota, and KDAL, Duluth. Speaker: William A. O'Brien, M.D., Director of Postgraduate Medical Education, Medical School, University of Minnesota.

April 4—Progress in Cancer Control
April 11—Cancer of Breast
April 18—Cancer Diagnosis
April 25—Tumors of Mouth

## WAR SESSIONS OF THE AMERICAN COLLEGE OF SURGEONS

During March and April a number of one-day "War Sessions" on problems of military service and civilian defense for medical and hospital personnel have been and are being held by the American College of Surgeons in cities throughout the country. On May 1 such a meeting will be held at the Radisson Hotel in Minneapolis.

The meetings open at 9:00 a.m. with panel discussions on treatment of war injuries for the medical profession and a forum on civilian defense as related to hospitals, led by a medical officer of the United States Office of Civilian Defense, for hospital personnel. From 10:45 to noon a joint meeting for physicians, surgeons and hospital representatives is held, with medical officers of the United States Army, the United States Navy, and the Office of Civilian Defense, as speakers. At the joint luncheon which follows, the Procurement and Assignment Service in relation to the medical profession and to hospitals, is discussed by Major Sam F. Seeley, Executive Officer, a specially appointed delegate. In the afternoon, panel discussions for the medical profession are held on treatment of wounds of soft parts and on fractures, and for hospital representatives on special problems incident to the war as affecting hospitals.

The dinner meeting and the panel discussions which follow, on treatment of burns and prevention and treatment of shock, are for the entire group. The representatives of the army and the navy medical corps collaborate with civilian surgeons in leading these discussions.

Hospital representatives and the medical profession in the participating states took advantage in considerable numbers of the opportunity afforded them at the meetings held in March, to obtain direct authoritative information on the meeting of war responsibilties by workers in the health field. The success of these meetings justified their extension to the remaining states as shown by the April schedule. Hospital associations and state and county medical societies are coöperating with the American College of Surgeons in conducting the sessions.

## AMERICAN FEDERATION FOR CLINICAL RESEARCH

The second annual meeting of the American Federation for Clinical Research will be conducted at the Center for Continuation Study on the University of Minnesota campus, April 20-21.

The program for the meeting will consist of reports on original research investigation by members. There will be a dinner Monday evening.

Dr. Richard L. Varco is local chairman of the program committee. He is being assisted by members of the executive committee of the Clinical Research Club, University Hospitals: Dr. Charles E. McLennan, Dr. John A. Anderson, Dr. Olaf Mickelsen, Dr. Clarence Dennis and Dr. F. W. Hoffbauer. The latter is chairman of the local clinical society.

Membership in the society is limited to younger men and former members of clinical hospital staffs who have done original clinical research acceptable to the executive committee.

Dr. Maurice Schnitker of Toledo is president of the federation, and will preside at the meeting.

## GEORGE CHASE CHRISTIAN LECTURE

Dr. H. B. Andervont, principal biologist with the National Cancer Institute of the National Institute of Health, United States Public Health Service, will present the annual George Chase Christian lecture on Wednesday evening, April 15, in the Medical Science Amphitheater, University of Minnesota Medical School. His subject will be "Recent Trends in Cancer Research."

## INTERPROFESSIONAL MEETING

Physicians, dentists, druggists and nurses from ten surrounding counties will meet at an interprofessional dinner to be held at the St. Cloud Hotel, St. Cloud, April 23. The meeting is under the sponsorship of the Committee on Interprofessional Relationships, of which Dr. F. J. Savage of Saint Paul is chairman. Speakers will be Dr. P. F. Meyer of Faribault and Dr. Carl Johnson of Dawson. They will discuss rural nursing problems. Tickets are $1.00.

## STATE MEETING

A program of great interest and variety has been arranged by the Committee on Scientific Assembly for the 89th annual meeting of the Minnesota State Medical Association which is scheduled for Monday, Tuesday and Wednesday, June 29, 30 and July 1, at the newly remodelled Armory in Duluth.

Symposia, demonstrations and conferences will occupy the first half of each morning program and there will be special afternoon discussion on subjects of importance to the war effort in addition to the regular scientific program.

A clinical-pathological conference will start the day's schedule on Monday, with symposia on therapeutics and emergency surgery on Tuesday and Wednesday mornings.

There will be a demonstration of Sister Kenny's method on Monday morning, also. On Monday afternoon a three-cornered discussion on virus diseases in man, in animals and in plants will share attention with an obstetrical demonstration. On Tuesday morning there will be a conference and demonstration on blood plasma and transfusion to share the spotlight with the session on therapeutics. Tuesday afternoon will be devoted to scientific papers including the annual Russell D. Carman Lecture in radiology and also a special nutrition conference at which Dr. Julian Boyd of the Children's Hospital in Iowa City will be guest speaker.

On Wednesday morning there will be a tuberculosis conference in addition to the symposium on emergency surgery as well as clinics at Duluth hospitals arranged by the Academy on Ophthalmology and Otolaryngology. In the afternoon there will be an industrial health and safety conference to which shop managers, safety superintendents and others interested in industrial health will be invited. At the same time, the Academy will hold a special scientific meeting of its own. Guest speakers for this session, Drs. G. H. Haessler of Milwaukee and J. R. Lindsay of Chicago, will appear under Academy sponsorship on the general program Wednesday morning.

Among other out-of-state guests will be Dr. A. J. Carlson of Chicago, Dr. A. J. Quick of Milwaukee, Dr. F. W. Rankin of Lexington, Ky., president of the American Medical Association, and Dr. Arthur C. Christie of Washington, D. C., who will deliver the Carman lecture. Round-table luncheons will feature the first two days of the meeting. The social program will include an entertainment Monday night at the Northland Country Club and the banquet, Tuesday night, at the Hotel Duluth.

## THE MINNESOTA SOCIETY OF NEUROLOGY AND PSYCHIATRY

The regular meeting of the Minnesota Society of Neurology and Psychiatry was held at the Town and Country Club in Saint Paul, Tuesday, March 10, 1942. Dinner was served at 6:30 p.m.

The following program was presented:

1. A Clinical Evaluation of Electro-shock Therapy, One Hundred Cases (Inaugural Thesis)
   HENRY HUTCHINSON, M.D.
   Moose Lake
2. Complexities Concerning Criminal Responsibility
   J. C. MICHAEL, M.D.
   Minneapolis
   W. L. PATTERSON, M.D.
   Fergus Falls
3. Lupus Erythematosus Disseminatus, Neurological Findings. (Illustrated with colored motion pictures and slides, pathological demonstrations.)
   MAURICE N. WALSH, M.D.
   Rochester

## MINNESOTA PATHOLOGICAL SOCIETY

When the Minnesota Pathological Society meets April 7, members will hear a paper by Dr. Alvin F. Coburn of Columbia University, New York. Dr. Coburn's subject will be "The Rôle of Hemolytic Streptococcus in the Pathogenesis of Rheumatic Fever."

## RED RIVER VALLEY MEDICAL SOCIETY

The midwinter meeting of the Red River Valley Medical Society was held February 19 at Crookston.

Dr. Theodore H. Sweetser of Minneapolis presented a paper, "Injuries and Wounds of the Urinary Tracts," at the medical meeting which followed the dinner at the Hotel Crookston. Dr. W. W. Burnap of Fergus Falls discussed the plan for procurement of physicians for Army service.

## SAINT PAUL SURGICAL SOCIETY

A symposium on poliomyelitis will be held at the meeting of the Saint Paul Surgical Society, April 9, at the University Club. The symposium at 7:30 p.m. will be preceded by a dinner at 6:15 p.m.

Appearing by invitation, Dr. Miland E. Knapp of Minneapolis will present a paper on "The Kenny Technique for Treatment of Infantile Paralysis." Dr. Wallace Cole of Saint Paul will discuss the surgical aspects of poliomyelitis.

## SCOTT-CARVER SOCIETY

The Scott-Carver Medical Society met at Shakopee on February 17, 1942. Dr. Owen Robbins of Minneapolis spoke on the subject of "Sterility."

## STEELE COUNTY MEDICAL SOCIETY

Dr. D. E. Morehead of Owatonna was elected president of the Steele County Medical Society at its annual dinner meeting last month.

Other officers named were Dr. T. W. Stransky, vice president; Dr. R. J. Wilkowske, secretary-treasurer; and Dr. D. H. Dewey, censor for a three-year term. Dr. A. B. Stewart was appointed county representative to the state committee for procurement and assignment.

It was moved and unanimously voted that each member of the society pledge himself to the purchase of at least one defense bond each month.

## WASHINGTON COUNTY MEDICAL SOCIETY

The regular meeting of the Washington County Medical Society was held March 10 at Stillwater.

Considerable time was devoted to the Officers' Meeting on February 28, discussion of which was very lively. The Procurement Service questionnaire was discussed at length.

The scientific program was devoted to a colored movie, "Regional Anesthesia," in four reels. These moving pictures in all probability will solve a lot of the questions of scientific programs for many small county societies. The Washington County Medical Society finds the pictures very interesting and instructive.

# In Memoriam

### Ottul Klaranus Lindboe

Dr. O. K. Lindboe of Lac qui Parle, Minnesota, died on February 5, 1942, at the age of ninety, following a three weeks' illness.

Dr. Lindboe was born at Kongsberg, Norway, November 16, 1851. He attended grade and high school there and night school in Christiania (now Oslo), working during the day to pay his way. His father died when Dr. Lindboe was a small boy but his mother, who was also a doctor, brought her son to America when he was sixteen. After an eight weeks' ocean voyage they landed at Quebec. They traveled on cattle cars to Detroit and then took a boat to Chicago.

In 1868 the doctor started for Colorado with an uncle in search of gold. Having made a stake of about $5,000 during the year, he and his uncle set out on their return trip to Chicago. Carrying his belongings in a knapsack and sleeping out of doors, the young man awoke one morning to find he had been robbed of his fortune. After doing odd jobs for a time in Chicago he again set out for the West, but again met with misfortune, the party being attacked by Indians. The fight continued for nine days and the party was forced to live on mule meat. The doctor carried the scars of a bullet wound in a leg and an arrow wound in his back.

Returning to Chicago, Dr. Lindboe took a course in pharmacy and later attended Rush Medical College, where he received his medical degree in 1877. For two years he practiced in Illinois, Michigan, and in several Minnesota towns before going to Montevideo in 1879. The same year he married Anna Christine Johnson at Beloit, Wisconsin, and then moved to Lac qui Parle. Except for a few years when he lived in the town of Lac qui Parle, Dr. Lindboe made his home on his farm.

During his residence in the Lac qui Parle community, Dr. Lindboe served for more than thirty years on the school board and for many years on the town and health boards. He was a member of the Riverside Sanatorium board for a number of years but resigned last summer because of failing vision.

Mrs. Lindboe died in 1928. Dr. Lindboe is survived by a son, Andrew, of Minneapolis and three daughters, Mrs. Joe Anthony and Elsie of Lac qui Parle and Mrs. Robert Dahl of Dawson. One daughter, Ella, preceded him in death.

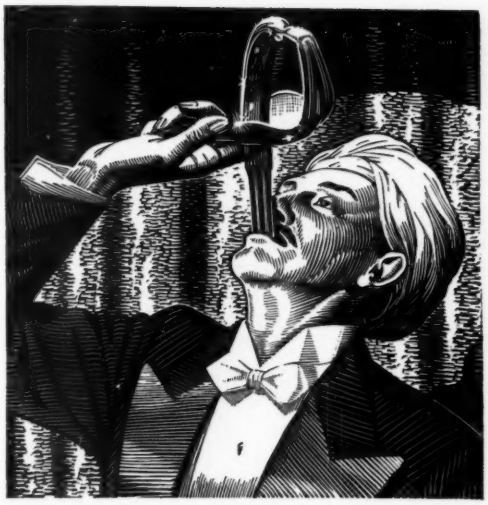
---

### Charles F. McNevin

Dr. Charles F. McNevin of Saint Paul died at St. Joseph's Hospital, February 16, 1942, following an intermittent illness of about two years.

Dr. McNevin was born February 19, 1877, at Cresco, Iowa, the son of George McNevin and Rose McConville McNevin. His parents died when he was very young and he moved to Lawler, Iowa, where he re-





PICTURE OF A PATIENT
WITH *Pharyngitis*

**When your patients with pharyngitis, tonsillitis or aphthae complain of feeling as if they had swallowed a sword, NUPORALS, "Ciba," offer quick relief. Containing the well-known anesthetic, Nupercaine* (*a* — butyloxychinchoninic acid diethylethylenediamide hydrochloride), these lozenges produce a prolonged local anesthesia of the mucous membranes of the oral cavity and throat when dissolved in the mouth.**

**Further suggested uses for NUPORALS* include facilitating pharyngeal and laryngeal examinations, easing the passage of a stomach tube, curtailing pain induced by denture irritation or surgical trauma.**

NUPORALS

BOXES OF 15 BOTTLES OF 100

*Trade Mark Reg. U. S. Pat. Off. The word "Nuporals" identifies throat lozenges of Ciba's manufacture, each lozenge contains one mgm. of Nupercaine, "Ciba."

CIBA PHARMACEUTICAL PRODUCTS, INC.
Summit New Jersey

CIBA

sided with an uncle and aunt. His early education was attained at Lawler. He received the degrees of Bachelor of Science in 1896, Master of Science in 1899, and a Master of Arts in 1901, all from Upper Iowa University. He thereafter took special graduate work at the University of Wisconsin.

Following his graduation at Upper Iowa University, he was superintendent of schools successively in Elkport, Clermont and Ossian, Iowa, and Graceville, Minnesota. He attained the degree of Doctor of Medicine from Northwestern University, Chicago, Illinois, in 1908.

He served a temporary period as intern at Mercy Hospital, Chicago. He entered the Mayo Clinic at Rochester, Minnesota, on June 18, 1908, and was an intern in St. Mary's Hospital for one year and a surgical assistant for fifteen months. He left the Mayo Clinic September 10, 1910, and entered into the practice of medicine and surgery at Saint Paul, Minnesota, where he practiced until his death.

In 1915 he married Abigail Warner Jones, whom he survived by seven years. No children were born of this marriage.

Dr. McNevin, at the time of his passing, was a member of the Board of Trustees of his Alma Mater, Upper Iowa University. Since 1940 he served as a member of the Board of Public Welfare for the City of Saint Paul and Ramsey County. He was a member of the Ramsey County Medical Society, American Medical Association, and the Alumni Association of the Mayo Foundation. He served in the World War I as a captain in the Medical Corps.

His congenial personality endeared him to a host of friends, and his kind ministrations made him deeply beloved by all his patients. He freely gave of his time and skill to those who came to him in need of surgical or medical care.

No physician was more devoted to his patients, but when away from his professional duties he had a fine sense of humor that was greatly appreciated by all who knew him. He had a particular fondness and love of children, and they reciprocated by genuine response to his delightful personality.

He is survived by his brother-in-law, F. A. O'Connor of Dubuque, Iowa, and two nephews Charles E. O'Connor of Washington, D. C., and Francis J. O'Connor of Dubuque, Iowa.

J. M. CULLIGAN, M.D.

---

*Benzedrine*, which has received a reputation as a pep-producer, has been found to have practically no effect upon the activity of the sloth.

---

*Self-disinfecting* drinking glasses are under study at the California Institute of Technology—the rims are coated with plastic-silver mixture said to kill practically all liquid-borne bacteria.

**Pause at the familiar red cooler for ice-cold Coca-Cola. Its life, sparkle and delicious taste will give you the real meaning of *refreshment.***

# WOMAN'S AUXILIARY

Mrs. John J. Ryan, *President*
Saint Paul, Minnesota
Mrs. L. R. Boies, *Publicity Chairman*
Knollwood, Hopkins, Minnesota

**East Central**

The February meeting of the East Central Counties was held at the home of Mrs. L. Hedenstrom at Cambridge, Minnesota, on the 17th. Mrs. David Gaviser, Princeton, was appointed Public Relations chairman. Most of the members are busy with local Red Cross knitting and some of the women are teaching Home Nursing Courses.

**Renville**

On February 8, Renville County Auxiliary held its regular monthly meeting at Olivia, Minnesota. Very interesting pictures of big game hunting in Canada and Alaska were shown by Dr. J. Cole of Redwood Falls.

Sincere sympathy from all members of the Auxiliary is extended to Dr. F. W. Penhall and family of Morton, in the death of Mrs. Penhall, February 9, 1942. Mrs. Penhall was a charter member of the County Auxiliary and was held in high esteem not only by this group, but by the community at large.

**Goodhue**

Mrs. E. M. Baldigo, Red Wing, Minnesota, opened her home to members of Goodhue County Medical Auxiliary, February 10. Mrs. E. H. Juers presented some very interesting material on the use of puppet shows in teaching rural children the needs and reasons for vaccination and inoculations.

Recently, five Auxiliary members including Mesdames E. M. Baldigo, R. V. Sherman, R. B. Graves, G. C. Kimmel, and E. H. Juers presented such a puppet show at an evening meeting of the Hay Creek 4-H Club. It was the highlight of the evening! Much credit goes to Goodhue Auxiliary, a new group, for planning such an interesting and unique project!

**Hennepin**

Hennepin members have had another busy month. On the evening of February 24, a Red Cross Benefit party was given in the Medical Assembly of the Medical Arts Building. A gay nineties show was the theme of the program. Clever numbers by the Auxiliary Octet under the direction of Mrs. Gilbert Seashore were introduced by Mrs. Ralph Knight. Assisting the octet and prominent in parts were Mmes. J. M. Hall, Horace Newhart, L. S. Arling, Malvin Nydahl, Harvey Nelson, W. J. Brynes, C. A. McKinlay, Joe Neale, J. S. Reynolds, and Drs. Annette Stenstrom and Erling Hanson. Minor parts were taken by Mmes. Elmer Lundquist, Wallace Beckman, and Ralph Creighton. The octet included Mmes. A. N. Russeth, W. R. Jones, R. H. Lindquist, Leo Fink, T. H. Sweetser, K. W. Anderson, E. T. W. Boquist. The musical accompaniment was furnished by the "be-wigged and be-moustached" orchestra which included Drs. Paul Giessler, Lewis Daniel, R. T. LaVake, A. E. Cardle, and F. H. Schaaf. The last, but by no means the least humorous, part of the program was a "take-off" on the ladies' entertainment and was produced by a men's octet in women's costumes, also of the gay nineties period. The following performed and sang in this group: Drs. E. G. Oppen, R. O. Quello, Elmer Lundquist, C. G. Arvidson, H. F. Wahlquist, Ralph Knight, Malvin Nydahl, and Roger Hallin. Delightful color for a "Mammy" song was furnished by two unusually corpulent Negroes played by Mmes. A. A. Wohlrabe, and Reuben Erickson. The audience enjoyed the program thoroughly, and no doubt the actors and actresses had some fun, too.

Following the entertainment, light refreshments were served by the social chairman, Mrs. John Curtin, and her committee. Mrs. Harold Wahlquist acted as general chairman of the party and Mrs. Frank Bryant as ticket chairman.

On March 6, seventy-five members of the Auxiliary heard Dr. Emilio Le Forte, University of Minnesota, speak on "Our Neighbors to the South." Following the meeting, Mrs. J. C. Davis assisted by Mmes. Herman Drill and Willis Thompson, served tea. Hostesses for the day were Mrs. L. J. Leonard and Mrs. L. K. Buzzelle.

**St. Louis**

Mrs. P. S. Rudie, Duluth, president of St. Louis County Auxiliary, has moved with her family to Bremerton, Washington, to be with her husband, who is attached to the Naval Base Hospital there. Mrs. H. J. Bianco, Duluth, is now acting president of the Auxiliary.

**Ramsey**

Many Ramsey County Auxiliary members are working hard in their very successful Red Cross Unit. Others are busy planning two important teas to be given in April. One, the Auxiliary Public Relations Tea, will take place April 27. At the time of the meeting of the American College of Physicians to be held in Saint Paul, April 21-25, the Auxiliary with the Women's Entertainment Committee of that group will give a joint tea. Mrs. E. V. Goltz, Saint Paul, is general chairman of the entertainment committee for the wives of the visiting doctors coming to the city at the time of the meeting.

---

Mrs. J. A. Cosgriff, Olivia, chairman of *Hygeia*, is to be commended on a fine piece of work. Recently, a check for $221.25 was received from the State Medical Association in payment for *Hygeia* subscriptions for all State Senators and Representatives.

---

The State Medical Association convention is to be held in Duluth, June 29, 30 and July 1, 1942. Why not plan, now, to be there?

---

In a few more months the members of the Woman's Auxiliary of the American Medical Association will be arriving in Atlantic City, New Jersey, for their annual convention, June 8-12. Have you made your reservations? If not, send your request *at once* to Haddon Hall, Atlantic City, New Jersey.

## OF GENERAL INTEREST

Dr. C. G. Uhley of Crookston and Dr. Harry B. Neel of Albert Lea have been certified by the American Board of Surgery.

* * *

Dr. Charles E. Stafford is back at Baudette after completing a postgraduate course at Cook County Hospital in Chicago.

* * *

Drs. Arthur B. Roehlke and Gordon H. Tesch of Elk River now have offices in a new building constructed for their use.

* * *

Dr. Earl J. Boehme of Minneapolis left March 26 for Boston, where he has accepted a fellowship in surgery at the Lahey Clinic.

* * *

When the University of Buffalo Medical Alumni Association held its eighth annual spring clinical day, March 28, in Buffalo, New York, Dr. Philip S. Hench of Rochester was among the speakers.

* * *

Dr. Henry B. Clark, Jr., of Saint Paul recently returned to Camp Robinson, Arkansas, after taking a course of instruction on maxillo-facial surgery at the Army Medical Center, Washington, D. C.

* * *

Dr. William C. McCarty, professor of pathology, University of Minnesota Graduate School, Minneapolis and Rochester, was the speaker at the ninth annual lecture course of the San Jose (California) Hospital Association, March 23-27. The course was concerned with the early clinical diagnosis of neoplastic diseases.

Dr. Wallace S. Petty, who recently completed a public health course at the University of Minnesota, Minneapolis, has been appointed director of local public health service for the Nebraska State Department of Health, Lincoln.

* * *

Dr. Bertram S. Adams has been named chief of staff of the new Hibbing General Hospital which was dedicated, March 1. Dr. Adams is head of the Adams Clinic and past president of the Minnesota State Medical Association.

* * *

Dr. George Halladay, Brainerd physician, has been promoted to captain and assigned to the medical detachment of Saint Cloud, First Service Regiment, Minnesota defense force, it is announced by Adj. General E. A. Walsh.

* * *

Dr. Henry Silver who has been located at Sebeka since he took over the practice of Dr. A. H. Borgerson more than a year ago, has been called to active service with the United States Army Medical Corps. He has been assigned to Camp Barkley, Texas.

* * *

Because college men have been declared by a special University of Minnesota investigating committee to be less fit for military service than others, action is being taken to institute some type of physical and health development program. The College of Education already has adopted an extension of previous physical education requirements.

**REST HOSPITAL**

A quiet, ethical hospital with therapeutic facilities for the diagnosis, care and treatment of Nervous and Medical cases. Invites coöperation of all reputable physicians who may supervise the treatment of their patients.

**PSYCHIATRISTS IN CHARGE**
**Dr. Hewitt B. Hannah**
**Dr. Joel C. Hultkrans**

**2527 2nd Ave. S., Minneapolis, Phone At. 7369**

**PRESCRIBE OR DISPENSE ZEMMER**

Pharmaceuticals . . . Tablets, Lozenges, Ampoules, Capsules, Ointments, etc. Guaranteed reliable potency. Our products are laboratory controlled.

Zemmer

**ALWAYS DEPENDABLE PRODUCTS**

Write for literature.

*Chemists to the Medical Profession*

**THE ZEMMER COMPANY**
**Oakland Station, PITTSBURGH, PA.**

MIN 4-42

Dr. and Mrs. V. W. Carlson of Blooming Prairie spent part of last month in Brownsville, Texas, Dr. Carlson recuperating from his recent illness before resuming his practice.

* * *

Dr. Charles W. Mayo of Rochester delivered the annual LeRoy Long Memorial lecture sponsored by Phi Beta Pi fraternity at the University of Oklahoma, Oklahoma City, March 13. His topic was "Principles of Surgery of the Colon."

* * *

Dr. and Mrs. Wallace P. Ritchie of Saint Paul are the parents of a son, Daniel Goodhue, born February 15. Dr. Ritchie is on active duty with the United States General Hospital No. 26, University of Minnesota group.

* * *

Dr. Gaylord W. Anderson, head of the department of preventive medicine and public health at the University of Minnesota, and Dr. Wesley W. Spink, associate professor of medicine, have been appointed consultants to the Secretary of War on epidemic diseases.

* * *

Dr. Frank H. Krusen of Rochester spoke on "The Relation of Physical Therapy in War" at the spring session of the Midwestern Section of the American Congress of Physical Therapy held in Iowa City, April 6.

* * *

Captain Raymond A. Lawn of Minneapolis was among the members of the United States Army Medical Corps who were graduated from a special course in the Medical Field Service School at Carlisle Barracks, Pennsylvania, February 20.

* * *

Among speakers at the forty-second annual meeting of the American Association of Pathologists and Bacteriologists held at the Washington University School of Medicine in St. Louis, April 2-3, was Dr. E. T. Bell of Minneapolis. His subject was "The Vascular Changes in the Kidney in Diabetes Mellitus."

* * *

Dr. Owen H. Wangensteen, head of the department of surgery at the University of Minnesota Medical School, will give a paper at the annual convention of the American Surgical Association in Cleveland, April 6-8. His paper is entitled, "New Operative Technics in the Management of Bowel Obstruction."

* * *

Among new Fellows in the Mayo Foundation at Rochester is Dr. William M. Faber of Watertown, Wisconsin, a graduate of the University of Wisconsin Medical School. Dr. Faber interned at the Charles T. Miller Hospital in Saint Paul. He has been instructor in anatomy at the University of Wisconsin since July, 1940.

* * *

Dr. T. J. Bloedel, a member of the staff of St. Barnabas Hospital in Minneapolis, has moved to Gaylord where he will open offices. A graduate of the University of Minnesota Medical School, Dr. Bloedel served his internship at Minneapolis General Hospital and was a clinical assistant in medicine at the University Hospitals.

*In Congestive Heart Failure*

Theocalcin

*(theobromine-calcium salicylate)*

To diminish dyspnea, reduce edema and increase the efficiency of the heart action, prescribe Theocalcin in doses of 1 to 3 tablets, t. i. d., with meals. It acts as a potent diuretic and myocardial stimulant.

Tablets 7½ grains each, also Theocalcin powder.

KNOLL BILHUBER

BILHUBER-KNOLL CORP. ORANGE, NEW JERSEY.

. . . . water without minerals is like food without salt

TASTE

GLENWOOD
INGLEWOOD
NATURAL*
SPRING WATER

for home and office

GENEVA 4351

*Naturally Mineralized, Naturally Healthful

*86c out of each $1.00 gross income used for members benefit*

PHYSICIANS CASUALTY ASSOCIATION
PHYSICIANS HEALTH ASSOCIATION

Hospital, Accident, Sickness
INSURANCE

For ethical practitioners exclusively
(56,000 Policies in Force)

| | |
|---|---|
| LIBERAL HOSPITAL EXPENSE COVERAGE | For $10.00 per year |
| $5,000.00 ACCIDENTAL DEATH<br>$25.00 weekly indemnity, accident and sickness | For $32.00 per year |
| $10,000.00 ACCIDENTAL DEATH<br>$50.00 weekly indemnity, accident and sickness | For $64.00 per year |
| $15,000.00 ACCIDENTAL DEATH<br>$75.00 weekly indemnity, accident and sickness | For $96.00 per year |

*40 years under the same management*
$ 2,220,000.00 INVESTED ASSETS
$10,750,000.00 PAID FOR CLAIMS
*$200,000 deposited with State of Nebraska for protection of our members.*
Disability need not be incurred in line of duty—benefits from the beginning day of disability.
**Disabilities occasioned by war are covered in full.**
*Send for applications, Doctor, to*
**400 First National Bank Building Omaha, Nebraska**

Dr. Gerhard E. Knutson has become associated in practice with Dr. Vernon D. E. Smith, Dr. Malcolm Pearson, Dr. Henry Reif and Dr. Herman Wolff in Saint Paul.

For the past year, Dr. Knutson has been doing postgraduate work in children's diseases at the Children's Memorial Hospital in Montreal, Canada.

* * *

When the American College of Radiology held its twelfth annual conference meeting with teachers of clinical radiology, February 15, in Chicago, Dr. Byrl R. Kirklin of Rochester led a panel discussion on "Should the Training of Residents and Fellows in Radiology Be Modified During the Period of the War?"

* * *

When the second American Congress on Obstetrics and Gynecology is held in St. Louis, April 6-10, Dr. Alexander E. Brown and Dr. Lawrence M. Randall of Rochester will present papers. Dr. Brown's subject is "History and Pharmacologic Aspects of Chemotherapeutic Drugs," and Dr. Randall's, "Gonadotropic Hormones."

* * *

Dr. Jennings C. Litzenberg, professor emeritus of obstetrics and gynecology at the University of Minnesota, was invited to give the Charles Sumner Bacon lectures in his specialized fields at the University of Illinois College of Medicine, March 18 and 19. His subjects were "The Significance of the Decreased Maternal Mortality Rates" and "Tradition and Truth Concerning Ectopic Pregnancies."

* * *

Dr. Leo G. Rigler, head of the department of radiology, University of Minnesota School of Medicine, will be a guest speaker at the meeting of the South Dakota State Medical Association in Sioux Falls, May 15. His subject will be "Differential Diagnosis of Pulmonary Diseases."

On March 6, Dr. Rigler addressed the Detroit Roentgen Ray Society.

* * *

Dr. Irvine McQuarrie and Dr. Arild E. Hansen of the University of Minnesota School of Medicine, department of pediatrics, will take part in a symposium on "Regeneration of Blood Protein in Clinical Conditions" at the meeting of the American Institute of Nutrition to be held in conjunction with the meeting of the Federation of American Biological Societies in Boston, April 1-5.

* * *

Dr. E. T. W. Boquist of Minneapolis, former fifth district American Legion commander, has been elected chief medical officer of the Minnesota Soldiers Home, by the board of directors. He succeeds Dr. Oliver R. Bryant who resigned recently after nine years as chief medical officer.

The appointment of Dr. Boquist, a graduate of the University of Minnesota Medical School, was effective April 1. Dr. Boquist is a member of the staff of Swedish Hospital.

Dr. Edward Dyer Anderson, Minneapolis child specialist and an associate of Dr. Max Seham for fifteen years, has been named a lieutenant commander in the United States Navy.

Dr. Anderson, who volunteered his services as a medical specialist, reported to Washington March 18, and is assigned to the navy dispensary.

Mrs. Anderson will join her husband in Washington.

* * *

Guest speakers at the ninety-first annual session of the Iowa State Medical Society to be held in Des Moines, April 15-17, will include Dr. John L. McKelvey of Minneapolis, head of the department of obstetrics and gynecology, University of Minnesota Medical School, and Dr. James T. Priestley of Rochester.

Dr. McKelvey's subject will be "Cesarean Section," and Dr. Priestley's, "Carcinoma of the Stomach."

* * *

Drs. Lee, Westby and Westby last month moved into their new clinic building in Madison, Minnesota. A modern, well-arranged brick structure, the Madison Clinic is 42 x 52 feet and is divided into thirteen rooms. The waiting room has a seating capacity of twenty-five people.

Dr. Nels Westby and Dr. W. N. Lee have been associated in practice since 1915. They were joined in 1927 by Dr. Magnus Westby.

* * *

Cancer statistics for Minnesota show a steady yearly increase in the number of deaths, according to Dr. W. A. O'Brien, president of the Minnesota Society for the Control of Cancer. In 1910 there were 1,532 deaths, while in 1940 there were 3,767. These facts revealed a circumstance peculiar to Minnesota alone—that in 1940, 53 per cent of the deaths were males and 47 per cent, females. Although the disease occurred in all age groups, it took its greatest toll among those forty-five to seventy-four years of age.

* * *

Among charter members of the newly organized American Gastroscopic Club are Dr. James B. Carey of Minneapolis and Dr. Herman J. Moersch of Rochester. In the society's objectives, emphasis is placed on the fact that the gastroscope should be an instrument used by internists and surgeons and not by technical specialists.

Applicants for membership must have adequate training in internal medicine, gastro-enterology or surgery; they must be members of a scientific organization of high standard or they must be certified by the boards of internal medicine, gastro-enterology or surgery, and they must be recommended by two active members.

* * *

The first course of instruction in the Kenny method for medical directors of physiotherapy training schools was presented at the Center for Continuation Study on the University of Minnesota campus, March 28-April 2.

This will be followed by other courses of one-week's duration for orthopedists, pediatricians, neurologists and public health physicians, in groups of fifteen.

There will also be courses of instruction of one week's duration for nurses in key teaching positions in

**Cook County Graduate School of Medicine**
**(In Affiliation with Cook County Hospital)**
*Incorporated not for profit*
ANNOUNCES CONTINUOUS COURSES

SURGERY—Two Weeks Intensive Course in Surgical Technique with practice on living tissue, every two weeks throughout the year. General Courses One, Two, Three and Six Months; Clinical Courses; Special Courses. Rectal Surgery every week.
MEDICINE—Two Weeks Intensive Course will be offered starting June 1 and October 5. Two Weeks Course in Gastro-Enterology will be offered starting June 15 and October 19. Two weeks Intensive Course in Electrocardiography and Heart Disease starting August 3.
FRACTURES & TRAUMATIC SURGERY—Two Weeks Intensive Course will be offered starting May 4, June 29 and September 21. Informal course available every week.
GYNECOLOGY—Two Weeks Intensive Course will be offered starting June 15 and October 19. One Month Personal Course starting August 3. Clinical and Diagnostic Course every week.
OBSTETRICS—Two Weeks Intensive Course will be offered starting October 5. Three Weeks Course starting May 25 and August 10. Informal Course every week.
OTOLARYNGOLOGY—Two Weeks Intensive Course will be offered starting September 14. Clinical and Special Courses every week.
OPHTHALMOLOGY—Two Weeks Intensive Course will be offered starting September 28. Five Weeks Course in Refraction Methods starting May 11 and October 9. Informal Course every week.
ROENTGENOLOGY—Courses in X-ray Interpretation, Fluoroscopy, Deep X-ray therapy every week.

*General, Intensive and Special Courses in All Branches of Medicine, Surgery and the Specialties.*

TEACHING FACULTY — ATTENDING STAFF OF COOK COUNTY HOSPITAL

**Address: Registrar, 427 S. Honore St., Chicago, Ill.**

**PROFESSIONAL PROTECTION**

SINCE 1899 SPECIALIZED SERVICE

A DOCTOR SAYS:
*"This is one check I never mind writing. After the threatened suit against me a couple years ago and your prompt action in thwarting it, I realize what value and protection it brings."*

THE
**MEDICAL PROTECTIVE COMPANY**
OF
FORT WAYNE, INDIANA

the nursing aspects of the Kenny technique. These will be given for groups of twenty-five.

Courses of two to six months' duration will be offered registered physiotherapy technicians. A series of proficiency tests will be given at the end of a two months' probation period and thereafter until the method is mastered. Upon successful completion of the course, a certificate of proficiency will be issued.

This series of courses will be repeated whenever the occasion demands during the next six to twelve months or until all who desire instruction have received it.

For further information, apply to the director of the Center for Continuation Study, University of Minnesota, Minneapolis.

* * *

Retiring after thirty-nine years of active practice in North Saint Paul, Dr. E. W. Cowern has gone to Seattle, Washington, to make his home with his daughter.

Dr. Cowern, who is seventy-one years old, graduated with honors from Dartmouth Medical College in 1902. He began his practice in North Saint Paul the following year. During the First World War, Dr. Cowern served as medical instructor and later as Camp Sanitary Officer.

Dr. Cowern has served as North Saint Paul health officer, deputy coroner, school physician. He was on the staff of St. John's Hospital for many years, and served as chief of staff for a term.

Four continuation courses were offered at the University of Minnesota Center for Continuation Study last month.

Guest speakers for the course in Otolaryngology, March 2-7, included: Dr. Gordon F. Harkness of Davenport, Iowa, chairman of the section on Laryngology, Otology and Rhinology, American Medical Association; Dr. James H. Maxwell of Ann Arbor, Michigan, assistant professor of otolaryngology, University of Michigan Medical School; Dr. Wellwood Nesbit, professor of otolaryngology, University of Wisconsin Medical School, Madison; Dr. Lyman G. Richards of Boston, director of the Bronchoesophagoscopy Clinic, Massachusetts Eye and Ear Infirmary; Dr. Oliver E. Van Alyea, associate in otolaryngology at the University of Illinois College of Medicine, Chicago.

A course in Diseases of Rectum and Colon was offered March 23-28.

Dr. Mary Karp of Chicago was guest speaker at the continuation course in Anesthesiology for Nurse Anesthetists, March 26, 27, 28. Dr. Karp is clinical assistant in surgery at Northwestern University Medical School and chief anesthetist at Wesley Memorial Hospital.

Guest speakers for the course in Roentgenology of the Head and Neck, March 30-April 1, were Dr. William E. Chamberlain, professor of radiology, Temple University School of Medicine, Philadelphia, and Dr. Arthur E. Childe, roentgenologist, Montreal Neurological Institute, Department of Neurology and Neurosurgery, McGill University, Montreal.

**Vocational Hospital**

. . . An integral part of the Miller Vocational High School offers two special features—Patients receive a maximum of personal attention from student practical nurses—All food is prepared under the direction of a qualified dietitian. Patients remain under the care of their own physicians.

*Director of Nurses—M. H. WOLTMAN, R.N., B.S.*
*Superintendent & Dietitian—H. B. BROWN, B.S.*

*Physicians may secure services of Vocational nurses by calling Nurses Headquarters and asking for a Vocational Nurse*

**Bridgeport 2281**

**5511 South Lyndale - - - Minneapolis**

**DANIELSON MEDICAL ARTS PHARMACY, INC.**

**10-14 Arcade, Medical Arts Building**

**PHONES:** ATLANTIC 3317, ATLANTIC 3318

825 Nicollet Avenue—Two Entrances—78 South Ninth Street MINNEAPOLIS

**HOURS:** WEEK DAYS—8 to 7, SUN. AND HOL.—10 TO 1

**PHYSICIANS AND HOSPITALS SUPPLY CO., Inc.**

414 SOUTH SIXTH ST., MINNEAPOLIS, MINN.

INSTRUMENTS · TRUSSES · EQUIPMENT · PHARMACEUTICALS · DRUGS

MAIN 2494

## BOOK REVIEWS

**Books listed here become the property of the Ramsey, Hennepin and St. Louis County Medical libraries when reviewed. Members, however, are urged to write reviews of any or every recent book which may be of interest to physicians.**

SURGERY OF THE AMBULATORY PATIENT. L. Kraeer Ferguson, A.B., M.D., F.A.C.S. Lieutenant Commander, Medical Corps, United States Naval Reserve; Assistant Professor of Surgery, University of Pennsylvania; Assistant Surgeon, Hospital of the University of Pennsylvania; Surgeon, Philadelphia General Hospital and Doctors Hospital, etc., etc. With a section on Fractures by Louis Kaplan, A.B., M.D., F.A.C.S. Associate in Surgery, University of Pennsylvania; Associate in Surgery, Mt. Sinai Hospital; in Charge of Fracture Division of the Surgical Out-Patient Department, Hospital of the University of Pennsylvania. 923 pages. Illus. Price, $10.00, cloth. Philadelphia: J. B. Lippincott Co., 1942.

COMMUNICABLE DISEASE NURSING. Theresa I. Lynch, R.B., Ed.D. Instructor in Education, New York University; Formerly Superintendent of Nurses and Director of Instruction, the Willard Parker Hospital, New York. 678 pages. Illus. Price, $3.75, cloth. St. Louis: C. V. Mosby Co., 1942.

---

SYMPTOM DIAGNOSIS. Regional and General. 4th ed. Wallace Mason Yater, A.B., M.D., M.S. (in Med.), F.A.C.P. 900 pages. Price $10.00 New York: D. Appleton-Century Company, Inc., 1942.

This volume is a valuable supplement to the practicing physician's library as it makes available in convenient form symptoms referable to the various system diseases. To facilitate quick reference there is a complete index and classification under regional symptoms as well as tables of differential diagnosis. This volume should aid in interpretation of symptoms not commonly encountered.

C. A. MCKINLAY.

---

BORN THAT WAY, Earl R. Carlson, M.D. 174 pages. Price $1.75. New York: John Day Co., 1941.

This is the autobiography of a victim of spastic paralysis; Dr. Carlson, with marked candor, tells the story of his life. In the first chapter he tells of his childhood, the difficulties he had in learning to walk and talk, how he was taken by his mother from one clinic to another and of their hopeless prognosis. He then tells of the difficulties he had in school, how he was unable to write or recite in his class because he could not control his muscles. He also tells of his many embarrassments during his college course and how discouraged he became during his medical course at Yale, especially in anatomic dissections. The last few chapters are devoted to his experiences in the neurologic clinic for spastics. He describes how muscle training and education have changed children who were once considered hopeless cripples into happy and self-supporting individuals.

I consider this book of great benefit to both the physician and the parents of a spastic child, and I have advised any parents who have one of these children to get the book and read it, as I am sure they will get a great deal of help and encouragement from Dr. Carlson's own life and experiences.

ALEXANDER STEWART, M.D.

---

THE CARE OF THE AGED (GERIATRICS). Malford W. Thewlis, M.D. 3d edition. 579 pages illus. $6.00. St. Louis; C. V. Mosby Co., 1941.

In interesting reading and in condensed form, the author covers our present knowledge of old age. The opening chapter states that Hippocrates, Celsus, Galen, Sanctorious, Kaan Boerhaave, Cicero, and others were familiar with the problems characteristic to the senescent age. Under the chapter "Value of Old Age," there is a long list of names of notable men and women who did their best work between the ages of seventy and ninety years. Among them were Goethe, Herbert Spencer, Oliver Wendell Holmes, Gladstone, the Drs. Blackwell (sisters), Thomas Edison, Mrs. Osler (William Osler's mother), and Rockefeller.

The remaining chapters deal with the neglect of old age, and the various diseases, with treatment, peculiar to the senescent age, and how they differ from presenescent diseases. Case histories are freely given. In pneumonia great stress is placed on clinical signs. When there is a normal pulse and an absence of sputum, chill, fever and pain, the frequent white blood cell counts determining the percentage of leukocytes and

*Announcing*

The acquisition of all good-will and patronage of the

DY-DEE WASH

by

**Baby's Diaper Service Company**

**2741 HENNEPIN AVENUE**

All Exclusive Features Now Available to All Patrons

Sterilization and Work for Both Companies Done at 2741 Hennepin

| St. Paul | Minnetonka | Minneapolis |
|---|---|---|
| Midway 4682 | Enterprise 3627 | Locust 4288 |

the presence of toxic granules, which is one of the most constant findings, decides the diagnosis. Roentgen therapy, the author says, has cured some carcinomata, and caused many. He recommends x-ray in diagnosis. In contrast to the normal senescence, is the opposite, where previous sickness, injuries and hardships result in various stages of senescent invalidism.

Old age hasn't definite limiting lines; it can begin in the forties. It covers a large part of one's lifetime. The author shows that it is a valuable age; that it has been a neglected age; and that it is worthy of a place among the specialties.

NELLIE N. BARSNESS, M.D.

---

CANCER OF THE FACE AND MOUTH. Diagnosis, Treatment, Surgical Repair. Vilray P. Blair, M.D., Sherwood, Moore, M.D., and Louis T. Byars, M.D. 599 pages. Illus. Price $10.00. St. Louis: C. V. Mosby Company, 1941.

This last work on carcinoma of the face is probably the most extensive and profound that has yet come out on this subject in the English language. The matter is taken up in systematic form—the cheeks, the neck, the mouth, et cetera, and each handled in a very thorough and detailed manner.

The methods of therapy are well considered including both radiation and surgery, and by far the most valuable part, in my opinion, is the description of the plastic procedures employed by the author and the astonishing results that were obtained in a good many cases as shown by the photographs especially. One must consider how thoroughly hopeless such cases usually are without the plastic procedure. The photographs number well over two hundred, and as it is well known that one picture is better than ten thousand words, one can readily see the extensive value of this work.

At the end of the book there is a chapter dealing entirely with technique on plastic surgery, and this to the surgeon is of paramount value. All in all, this book is a very valuable addition to the works already in existence on malignancy of the face, and it should serve as a criterion to both radiologist and surgeon for a decade of years.

E. Z. SHAPIRO, M.D.

---

*The Japanese death rate* is 17.4 per 1,000 as compared to 10 or 11 in the United States. Japan's present death rate, in fact, resembles ours of 1900. Individual causes of death in Japan are about as prevalent now as in this country about 1900. For example, the United States tuberculosis death rate now is 45 per 100,000. In Japan in 1937 the rate was 204, closely resembling our tuberculosis death rate in 1900 of 196. The picture is similar for diarrhea and enteritis. America has more than twice as many men to draw on in the military age group as Japan—25 million men from 20 to 34, as against Japan's 11 million in this age group. —*Science News-Letter*, Jan. 17, 1942.


CASE HISTORY No. 107

IRRITANT DERMATITIS

Mrs. S. S.—Symptoms: Eruption on neck and ear. Also swollen eyes, from time to time. Formerly used ordinary cosmetics. Change to AR-EX Cosmetic regime, together with soothing local treatment, brought about prompt clearing up of condition.

More doctors than ever are prescribing AR-EX Cosmetics today, for their purity and freedom from irritants and known allergens.

Send for Formulary
AR-EX COSMETICS, INC.
6 N. MICHIGAN AVE. • CHICAGO, ILL.

AR-EX COSMETICS.


## CLASSIFIED ADVERTISING

FOR SALE—Lucrative practice, Southwestern Minnesota. Population 2400. New $40,000 addition to municipally owned, modern hospital. Complete line of surgical instruments. 100 ma. x-ray, fluoroscope. Excellent library, laboratory. Modern well furnished office suite. Benedict-Roth basal metabolism machine. Fisher diathermia. Feree-Rand refractoscope. Ophthalmometer. Phoropter Bi-chrom check. Streak retinoscope. Overhead low for such a setup. Liquidating preparatory to military service. Address D-10, care MINNESOTA MEDICINE.

* * *

PRACTICE WANTED—Physician desires location in South Minneapolis for general practice. Can take over practice at once. Address D-4, care MINNESOTA MEDICINE.

* * *

POSITION WANTED—Experienced typist desires work typing manuscripts, letters and statements. Telephone EMerson 7880.

* * *

WANTED—Laboratory technician, either part or full time, in Saint Paul. No x-ray experience required. Address D-5, care MINNESOTA MEDICINE.

CITY HOSPITAL

(McIntosh, Minnesota)

FOR SALE

Eight-room hospital with living quarters and office on first floor. Located in large farming and dairying center. Scandinavian community. Will introduce purchaser.

Address
J. L. Ohnstad, M.D. McIntosh, Minnesota
Telephone: McIntosh 42